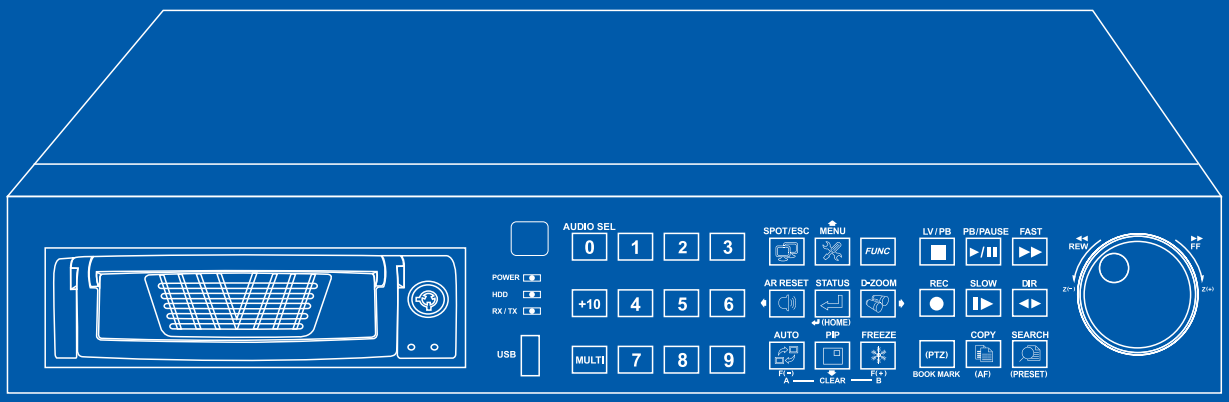
16/8/4CH Color Digital Video Recorder

INSTRUCTION MANUAL



DIGITAL VIDEO RECORDER

PACKAGE CONTENTS

Prior to installation of the 16 Channel DVR/8 Channel DVR/4 Channel DVR, please verify that the packaging contains the following contents:

1. One DVR
2. One AC Adaptor
3. One Power Cable
4. One Remote Controller
5. DVR Viewer Program CD
6. This Instruction Manual.
7. Two AAA batteries.
8. Rack Mount Ears and screws.

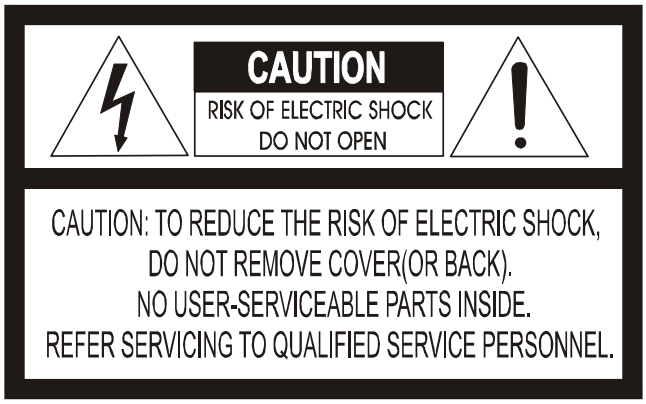
If any of the contents are missing, please contact the seller immediately.

RISK OF ELECTRICAL SHOCK WARNING

WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT INSERT ANY METALLIC OBJECTS THROUGH THE VENTILATION GRILLS OR OTHER OPENINGS ON THE EQUIPMENT.

CAUTION


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER(OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

EXPLANATION OF GRAPHICAL SYMBOLS

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instruction in the literature accompanying the product.

Disposal of Old Electrical & Electronic Equipment (Applicable in the European Union and other European countries with separate collection systems)

This symbol on the product or on its packaging indicates that this product shall not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. The recycling of materials will help to conserve natural resources. For more detailed information about recycling of this product, please contact your local city office , your household waste disposal service or the shop where you purchased the product.

DISCLAIMER

- While every effort has been made to ensure that the information contained in this guide is accurate and complete, no liability can be accepted for any errors or omissions.
- Maker reserves the right to change the specifications of the hardware and software described herein at any time without prior notice.
- No part of this guide may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form, by any means, without prior written permission of Maker.
- Maker makes no warranties for damages resulting from corrupted or lost data due to a mistaken operation or malfunction of the Digital Video Recorders, the software, personal computers, peripheral devices, or unapproved/unsupported devices.

Trademark Acknowledgements

- The names and products not mentioned here may be registered trademarks or trademarks of their respective companies.

FCC NOTICE

Digital Video Recorders, 4, 8 and 16 channels.

These devices comply with Part 15 of the FCC Rules. Operation is subject to the following two conditions;

1. These devices may not cause harmful interference, and
2. These devices must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for Class B digital devices, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. These equipments generate, use and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by on or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced technician for help.

Do not make any changes or modifications to the equipments unless otherwise specified in the manual. If such changes or modifications should be made, you could be required to stop operation of the equipment.

Read this First

Test Sessions

Before you try to record important subjects, we highly recommend that you make several test sessions to ensure that the Digital Video Recorder is operating and being operated correctly. Please note that Maker, its subsidiaries and affiliates, and its distributors are not liable for any consequential damages arising from any malfunction of the Digital Video Recorder or its accessories.

The Privacy act

Please note that the Digital Video Recorders are intended for surveillance use and should never be used in a manner that invades other people's privacy or contravenes international or domestic privacy act and its regulations. Please be advised that in certain cases the monitoring of individuals, private properties, or commercial properties may contravene legal rights of such individuals even if the images were recorded for personal use.

Warranty Limitations

This equipment's warranty is only effective in the country of sale. If a problem arises while the Digital Video Recorder is in use abroad, please convey it back to the country of sale before proceeding with a warranty claim to Maker.

SAFETY PRECAUTIONS

- Before using the Digital Video Recorder, please ensure that you read and understand the safety precautions described below. Always ensure that the Digital Video Recorder is operated correctly.

- The safety precautions noted on the following pages are intended to instruct you in the safe and correct operation of the Digital Video Recorder and its accessories to prevent injuries or damage to the self, other persons and equipment.

- In this Instruction Manual, the term “Digital Video Recorder”, “equipment” and “device” refers primarily to the Digital Video Recorder and its accessories such as power supply and its remote controller.

WARNINGS

- Do not cover the ventilation opening or slots on the outer casing. To prevent the Digital Video Recorder from overheating, provide at least two inches of air space around the vent and the slots.

- Do not drop metallic parts through slots. This could permanently damage the Digital Video Recorder. Immediately turn the Digital Video Recorder’s power off or unplug the power cord from the power outlet. Contact a qualified service personnel authorized by the equipment distributor or the Maker.

- Do not attempt to disassemble or alter any part of the equipment that is not expressly described in this guide. Disassembly or alteration may result in high voltage electric shock. Internal inspections, alterations and repairs should be conducted by qualified service personnel authorized by the equipment distributor or the Maker.

- Stop operating the equipment immediately if it emits smoke or noxious fumes. Failure to do so may result in fire or electrical shock. Immediately turn the Digital Video Recorder’s power off, remove the power cable from the power outlet. Confirm that smoke and fume emissions have ceased. Please consult the Digital Video Recorder reseller.

- Stop operating the equipment if a heavy object is dropped or the casing is damaged. Do not strike or shake. Failure to do so may result in fire or electrical shock. Immediately turn the Digital Video Recorder’s power off or unplug the power cord from the power outlet. Please consult the Digital Video Recorder reseller.

- Do not allow the equipment to come into contact with, or become immersed in, water or other liquids. Do not allow liquids to enter the interior. The Digital Video Recorder has not been waterproofed. If the exterior comes into contact with liquids or salt air, wipe it dry with a soft, absorbent cloth. In the event that the water or other foreign substances enter the interior, immediately turn the Digital Video Recorder's Power off or unplug the power cord from the power outlet. Continued use of the equipment may result in fire or electrical shock. Please consult the Digital Video Recorder reseller.

- Do not use substances containing alcohol, benzene, thinners or other flammable substances to clean or maintain the equipment. The use of these substances may lead to fire. Use a dry cloth on a regular periodic basis and wipe away the dust and dirt that collects on the device. In dusty, humid or greasy environments, the dust that collects around the ventilation or the slots on the outer casing over long periods of time may become saturated with humidity and short-circuit, leading to fire.

- Do not cut, damage, alter or place heavy items on the power cord. Any of these actions may cause an electrical short circuit, which may lead to fire or electrical shock.

- Do not handle the device or power cord with wet hands. Handling it with wet hands may lead to electrical shock. When unplugging the cord, ensure that you hold the solid portion of the plug. Pulling on the flexible portion of the cord may damage or expose the wire and insulation, creating the potential for fires or electrical shocks.

- Use only the recommended power accessories. Use of power sources not expressly recommended for this equipment may lead to overheating, damage of the equipment, fire, electrical shock or other hazards.

- The supplied power supply and power cord are designed for exclusive use with the Digital Video Recorder. Do not use it with other products or battery. There is a risk of fire and other hazards.

- Avoid using, placing or storing the equipment in places subject to strong sunlight or high temperatures, such as a greenhouse or trunk of a car. High temperatures may also cause deformation of the casing. Ensure that there is good ventilation when using the equipment.

- Do not operate the Digital Video Recorder beyond its specified temperature, humidity or power source ratings. Do not use the Digital Video Recorder in an extreme environment such as in high temperature or high humidity. Use the device at temperatures within 0℃~+40℃(32°F~104°F) and humidity below 90%.

PREVENTING MALFUNCTION

- Avoid Strong Magnetic Fields. Never place the Digital Video Recorder in close proximity to electric motors or other equipment generating strong electromagnetic fields. Exposure to strong magnetic fields may cause malfunctions or corrupt image data.

- Avoid Condensation Related Problems. Moving the equipment rapidly between hot and cold temperatures may cause condensation (water droplets) to form on its external and internal surfaces. You can avoid this by placing the equipment in an airtight, re-sealable plastic bag and letting it adjust to temperature changes slowly before removing it from the bag.

- If Condensation forms inside the Digital Video Recorder. Stop using the equipment immediately if you detect condensation. Continued use may damage the equipment. Remove the power cord from the power outlet and wait until the moisture evaporates completely before resuming use.

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I. FEATURE HIGHLIGHTS

1.1 OPERATION

A. PENTAPLEX PLUS FUNCTION
Simultaneous record, playback, mirror, backup, network transmission and partial live view.

B. REAL-TIME DISPLAY
Each channel is displayed at 30ips during live monitoring.

C. DIGITAL ZOOM
Up to 2 times digital zoom display. (Live only)

D. PICTURE-IN-PICTURE

E. EASY OPERATION
Control through the front panel buttons, IR remote controller, external joystick keyboard controller and USB 2.0 compliant mouse.

F. COVERT MODE
Hide channels in live, playback and network transmission.

1.2 RECORDING

A. RECORDING
Maximum recording speed of CIF 240 ips in 16 Channel DVR, CIF 240 ips in 8 Channel DVR and D_1/2 120ips in 4 Channel DVR.

B. MULTI-QUALITY / MULTI SPEED RECORDING
Recording in different recording qualities and record speed.

C. MULTIPLE RECORDING OPTIONS
Manual, event and schedule recording.

D. VERSATILE EVENT RECORDING
Motion, alarm and video loss recording option with dedicated pre and post recording per channel.

E. AUDIO RECORDING
16/8/4 channel audio recording.

1.3 PLAYBACK

A. MULTI-SCREEN
Single, quad, 6, 7, 9, 10, 13 and 16 channel playback.

B. VERSATILE SEARCH OPTIONS
Calendar, search & copy, timeline, event, block, file and bookmark search.

C. PREVIEW
Snapshot of search date and time in search mode.

1.4 NETWORK

A. MULTI-SITE LIVE MONITORING
Monitor up to 16 DVRs, or up to 256 cameras simultaneously.

B. REMOTE PLAYBACK
Review recorded data from the client software with fast forward and rewind, slow and pause.

C. REMOTE CONTROL
Remotely control the DVR as if pressing the front buttons or the IR remote controller.

D. REMOTE SETUP
Configure all DVR settings remotely from the client software.

E. FLEXIBLE NETWORK CONNECTIONS
Static and dynamic IP address supported along with proprietary DDNS support.

F. 2-WAY AUDIO COMMUNICATION
Communicate verbally between the DVR and the client software.

1.5 BACKUP

A. DVD-RW / CD-RW
Built-in DVD-RW optical drive enables easy backup to DVD-RW or CD-RW. Data retrieval is made simple with a mini-viewer that application is automatically included on disks burned with the DVR.

B. USB 2.0
Three available USB 2.0 ports allow the use of numerous USB 2.0 backup devices including XHD-10U external HDD add-on bays, individual external hard drives, external optical drives and USB memory sticks.

C. DATA REDUNDANCY / EVENT COPY ONLY
Flexible hard drive configuration allows data redundancy or backup event data only.

1.6 STORAGE

A. GENEROUS STORAGE CAPACITY
Four available internal hard drive bays allow up to 4 terabytes of storage.

B. HARD DRIVE EXPANSION BAY (XHD-10U)
Up to four XHD-10U hard drive expansion bays can be connected to the DVR. Each expansion bay is capable of supporting up to ten hard drives, totaling 40 terabytes of additional storage.

C. DATA REDUNDANCY / EVENT COPY ONLY
The hard drives in the expansion bays can also be configured to be data redundant or event copy only.

1.7 SYSTEM

A. 2 INDEPENDENT WATCHDOGS
Reliable software watchdog that monitors the system stability at all times.

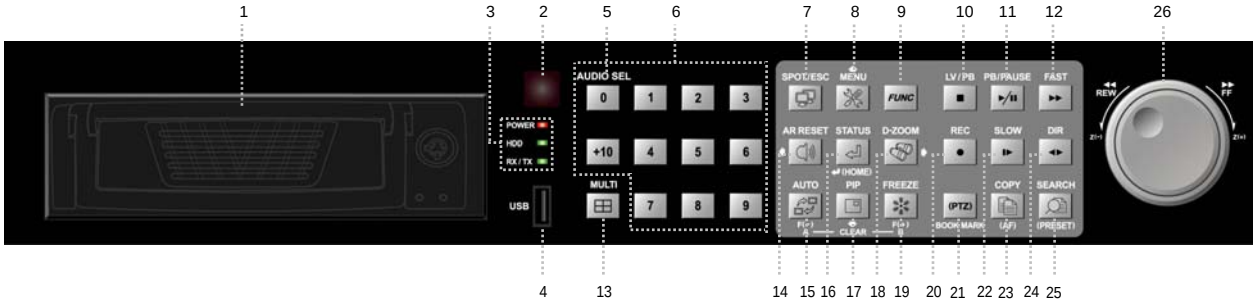
B. EASY UPDATE
Easy update / upgrade via USB 2.0 compliant memory stick or through the client program.

C. SIMULTANEOUS MULTIPLE VIDEO OUTPUT
a) Composite BNC main monitor output
b) VGA main monitor output
c) S-Video Output
d) Single-channel spot monitor output

D. MULTIPLE LANGUAGE SUPPORT
Available in English, Korean, Japanese, Polish, Spanish, Russian, Chinese, Taiwanese, French, Turkish, German, Italian and Portuguese.

II. DIGITAL VIDEO RECORDER LAYOUT

2.1 FRONT PANEL LAYOUT



1. CD-RW / DVD-RW
   A CD-RW or a DVD-RW drive is installed in the front 5.25” expansions bay. (sold separately).

2. IR RECEIVER
   Infrared signal receiver for the IR remote controller. Do not block the receiver as a clear line of sight is required for proper operation.

3. STATUS LED
   Displays the status of the DVR (Standby), HDD read/write and network transmission.

4. USB 2.0
   The USB 2.0 port can be used to connect to numerous USB 2.0 backup devices including XHD-10U external HDD add-on bays, individual external hard drives, external optical drives and USB memory sticks.

5. AUDIO SELECT
   This button selects the recorded audio channel.
   AUDIO SEL button + Channel button

6. NUMERIC BUTTONS / Channel SELECT
   a) Selects a specific channel number to be displayed in full screen.
   b) Enter the numeric password when prompted.

7. SPOT MONITOR / ESC
   a) Activates the spot monitor control.
   b) Returns to previous menu screen.
   c) Exits from various function and menu screens.

8. MENU / UP DIRECTIONAL BUTTON
   a) Accesses the main menu screen.
   b) Tilts up in PTZ mode.
   c) Navigates up in the menu screen.
   d) Moves the zoom box up in zoom mode.

9. FUNCTION
   a) Used in conjunction with the “USER” option for Relay 4 of the alarm output.
   b) Controls PTZ movement speed in PTZ mode.

10. LIVE / PLAYBACK
    This button exits the playback mode and returns to the live monitoring mode. Pressing this button once more will toggle between live and paused playback mode.

11. PLAY / PAUSE
    a) Starts the playback of recorded data. By default, the playback starts from the earliest recording. If the recording has been played back, the playback will start from where it was left off.
    b) Toggles between playback and pause mode.

12. FAST
    a) Fast forward. Press this button repeatedly to toggle between 2X normal playback speed through 128X normal playback speed.

13. MULTI(DISPLAY)
    This button is used to toggle between multiple display modes: 16 channel, 13 channel, 10 channel, 9 channel, 7 channel, 6 channel and 4 channel split screen display modes.

14. ALARM RESET / LEFT DIRECTIONAL BUTTON
    a) Resets the alarm buzzer.
    b) Left pans in PTZ mode.
    c) Navigates left in the menu screen.
    d) Moves the zoom box left in zoom mode.

15. AUTOMATIC SEQUENCE / FOCUS OUT / DECREASE VALUE / SECTION A
    a) Activates and deactivates the automatic channel sequence.
    b) Focuses out in PTZ mode.
    c) Decreases the value of a selection in the menu screen.
    d) Sets the starting point for loop playback in playback mode.

16. ENTER / STATUS / HOME
    a) Executes the selected function in the menu screen or enters the selected submenu.
    b) Accesses the status window from the main screen.
    c) Returns the PTZ camera to “home” mode in PTZ mode.
    d) Increases the digital zoom ratio in zoom mode.

17. PIP / LOOP PLAYBACK CLEAR / DOWN DIRECTIONAL BUTTON
    a) Activates the picture-in-picture mode.
    b) Tilts down in PTZ mode.
    c) Navigates down in the menu screen.

d) Moves the zoom box down in zoom mode.
e) Clears the loop playback in playback mode.

18. DIGITAL ZOOM / RIGHT DIRECTIONAL BUTTON
    a) Enters digital zoom mode.
    b) Pans right in PTZ mode.
    c) Navigates right in the menu screen.
    d) Moves the zoom box right in zoom mode.

19. FREEZE / FOCUS IN / INCREASE VALUE / SECTION B
    a) Freezes the live screen.
    b) Focuses in PTZ mode.
    c) Increases the value of a selection in the menu screen.
    d) Sets the ending point for loop playback in playback mode.

20. RECORD
    This button starts and stops the recording mode.

21. PTZ / BOOKMARK
    a) Enters PTZ control mode.
    b) Creates a bookmark during playback mode.

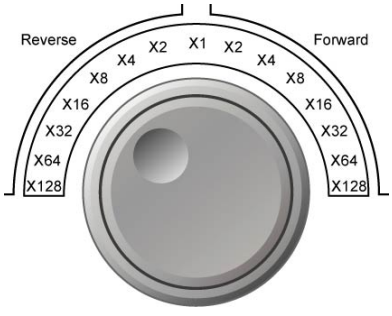
22. SLOW
    Slow playback. Press this button repeatedly to toggle between ½ normal playback speed through 128th normal playback speed.

23. COPY / AUTOFOCUS
    a) Enters the copy menu screen.
    b) Switches the PTZ camera to auto focus mode in PTZ mode.

24. DIRECTION
    Change the playback direction.

25. SEARCH / PRESET
    a) Enters the search menu screen.
    b) Sets the preset positions in PTZ mode.

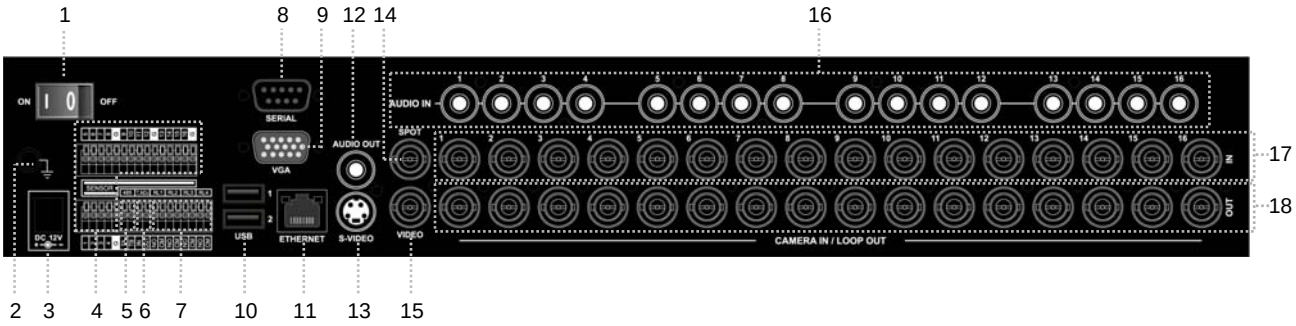
26. JOG SHUTTLE



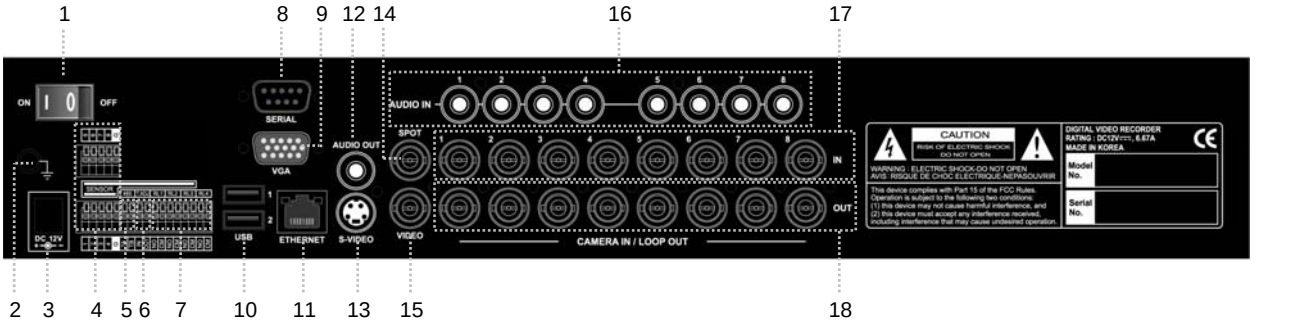
a) Shuttle ring: Controls the playback speed.
b) Shuttle ring: Controls the zoom in / zoom out in PTZ mode.
c) Jog dial: Advances picture by picture.
d) Jog dial: Controls the iris open / iris close in PTZ mode.

2.2 REAR PANEL LAYOUT

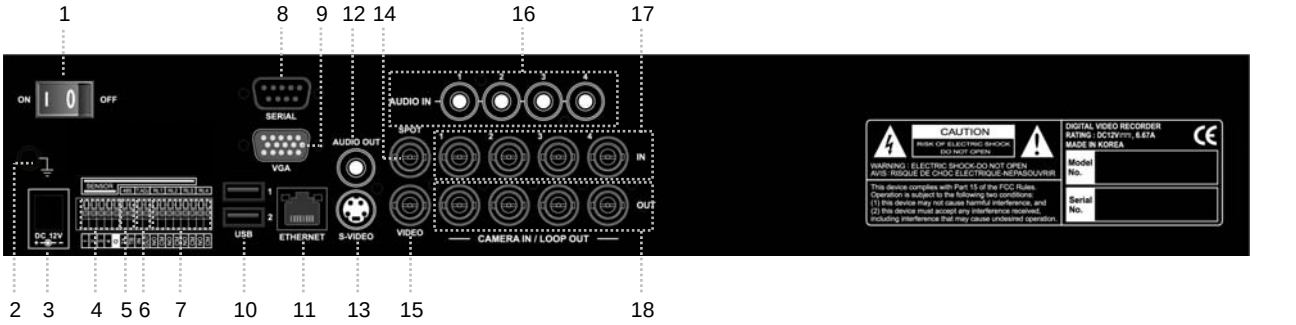
16 Channel DVR



8 Channel DVR



4 Channel DVR



1. POWER SWITCH
   This switch turns the DVR on or off.

2. GROUND
   Ground connector.

3. POWER IN
   DC power socket for 12VDC 6.67 Amps.

4. ALARM INPUT
   Alarm input 1 through 16 on 16 Channel DVR, 1 through 8 on 8 Channel DVR and 1 through 4 on 4 Channel DVR.

5. RS-485 TERMINAL BLOCK
   Terminal blocks for RS-485.

6. TIME SYNCHRONIZATION
   Input and Output terminal blocks for time synchronization between DVRs.

7. RELAY OUT
   Terminal blocks for relay out 1 through 4.

8. SERIAL(RS-232C)
   Reserved. The RS-232C port can be used to connect a variety of devices to control the DVR.

9. VGA OUTPUT
   D-sub 15-pin connector for PC monitor out.

10. USB REAR 1 / USB REAR 2
    The USB 2.0 ports can be used to connect to numerous USB 2.0 backup devices including XHD-10U external HDD add-on bays, individual external hard drives, external optical drives and USB memory sticks.

11. RJ-45 ETHERNET PORT
    10/100Base-T RJ-45 port for network connection.

12. AUDIO OUTPUT
    RCA connector for audio signal output.

13. S-VIDEO OUTPUT
    S-video connector for main monitor video signal output.

14. SPOT OUTPUT
    Spot monitor BNC connector for composite video signal output.

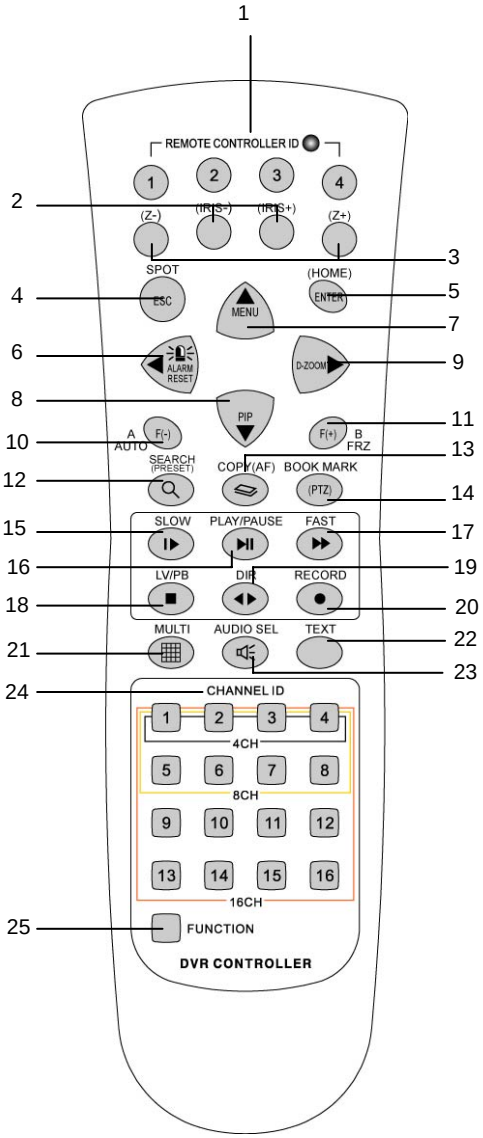
15. MAIN MONITOR OUTPUT
    BNC connector for main monitor composite video signal output.

16. AUDIO INPUT
    RCA connectors for audio signal input.

17. CAMERA INPUT
    BNC connectors for composite video signal input.

18. CAMERA LOOP OUTPUT
    Self-terminating BNC connectors for composite video signal loop output.

2.3 IR REMOTE CONTROLLER



1. REMOTE CONTROLLER ID
   Select the remote controller ID.

2. IRIS CONTROL

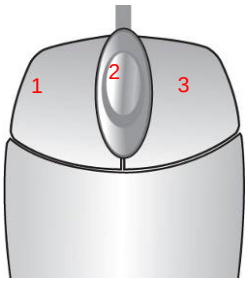
3. ZOOM CONTROL

4. SPOT MONITOR / ESC

5. ENTER / STATUS / HOME

6. ALARM RESET / LEFT DIRECTIONAL BUTTON
7. MENU / UP DIRECTIONAL BUTTON
8. PIP / DOWN DIRECTIONAL BUTTON
9. DIGITAL ZOOM / RIGHT DIRECTIONAL BUTTON
10. AUTOMATIC SEQUENCE / FOCUS OUT / DECREASE VALUE
11. FREEZE / FOCUS IN / INCREASE VALUE
12. SEARCH / PRESET
13. COPY / AUTOFOCUS
14. PTZ / BOOKMARK
15. SLOW
16. PLAY / PAUSE
17. FAST
18. LIVE
19. DIRECTION
20. RECORD
21. MULTI (DISPLAY)
22. TEXT
23. AUDIO SELECT
24. NUMERIC BUTTONS / Channel SELECT
25. FUNCTION

2.4 MOUSE CONTROL



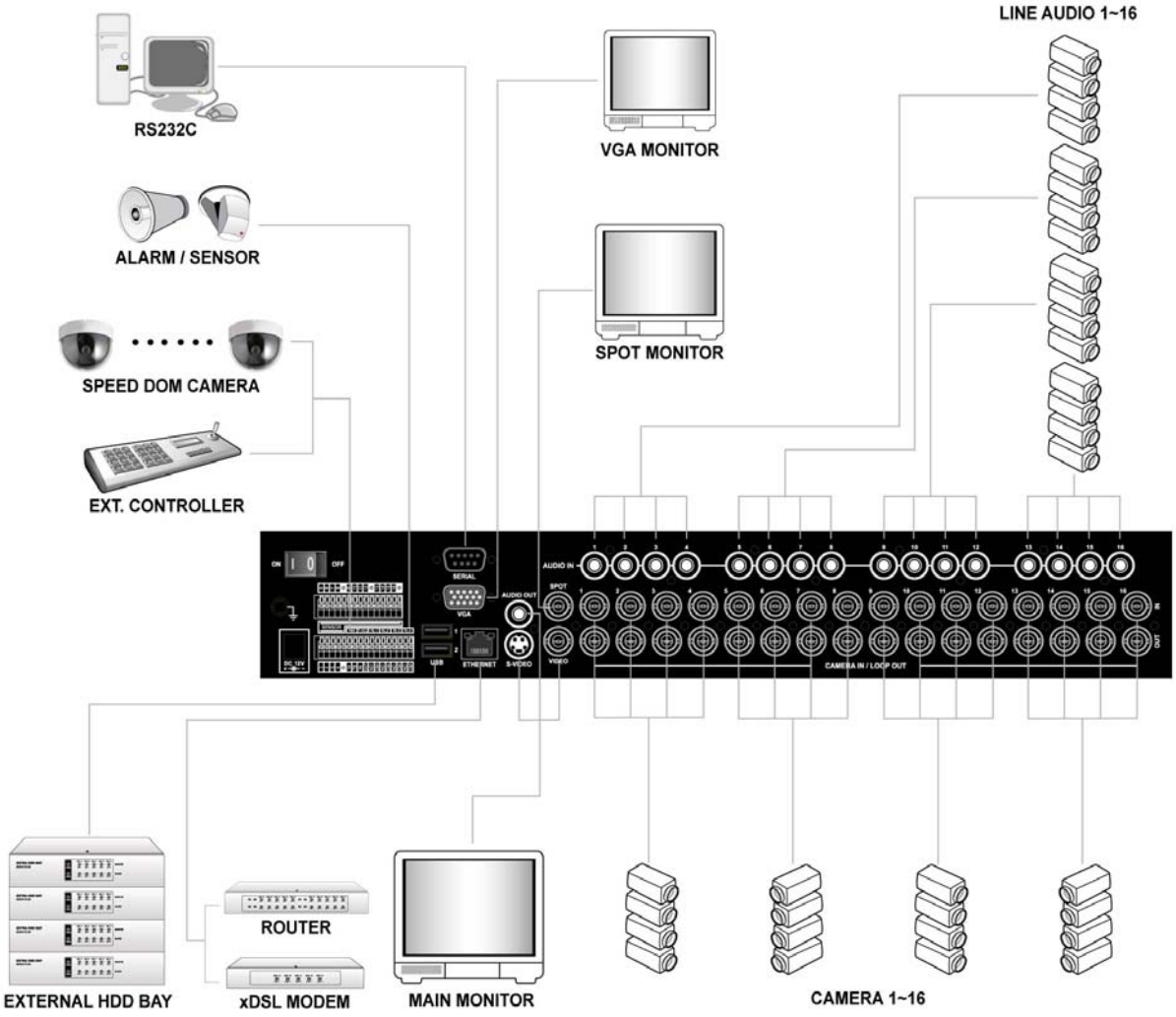
1. LEFT MOUSE BUTTON
   a) Double-click in the main window: status display.
   b) Double-click in the menu screen: select item or icon.

2. SCROLL WHEEL
   Scroll up or down to change the value of the selected item.

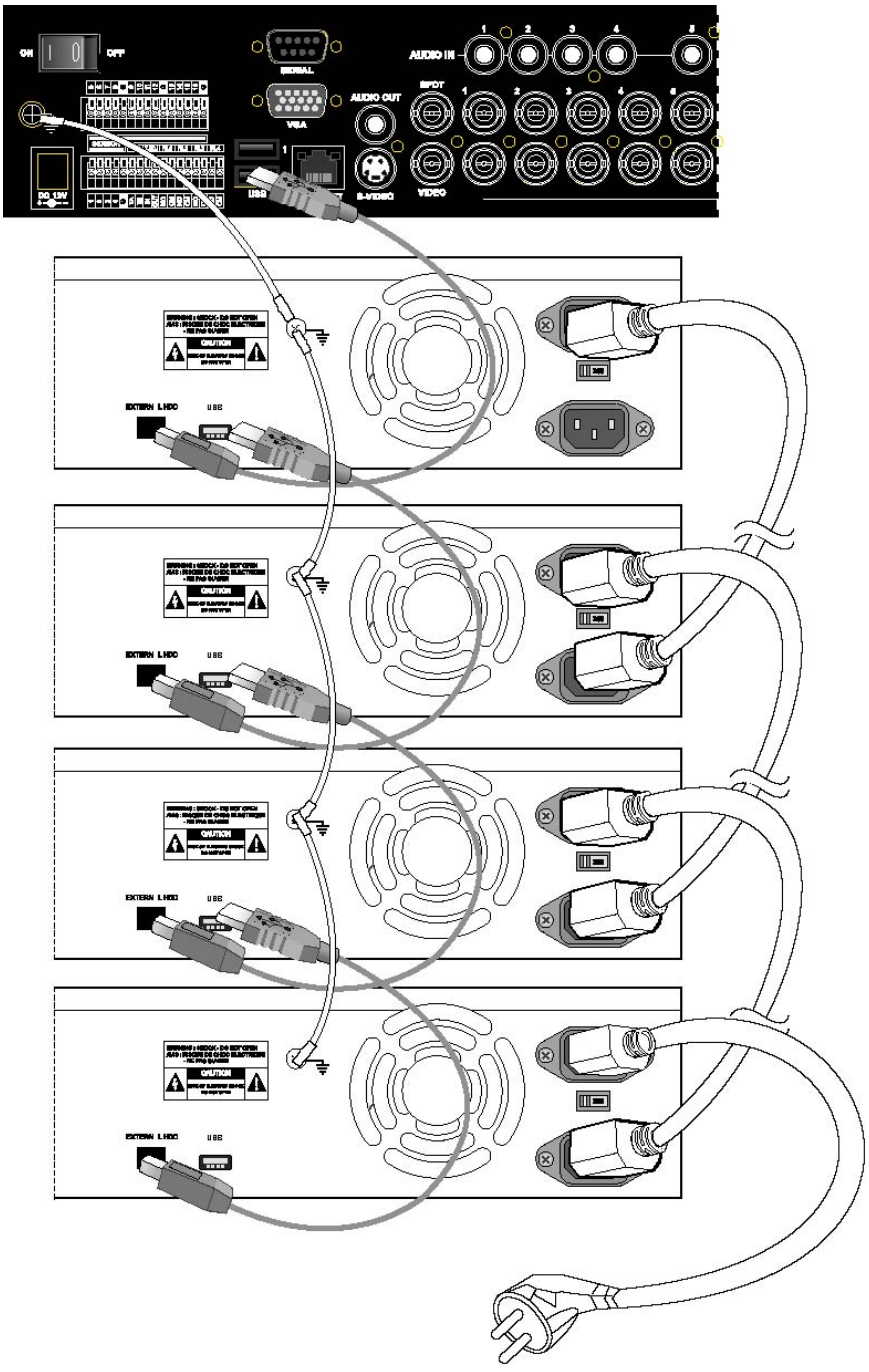
3. RIGHT MOUSE BUTTON
   a) Single-click in the main window: enter main menu.
   b) Double-click in the menu screen: exit to main screen.

III. INSTALLATION AND CONNECTIONS

3.1 CONNECTIONS LAYOUT



3.2 XHD-10U

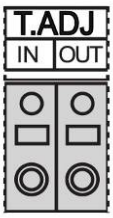


3.3 EXTERNAL TERMINAL CONNECTION

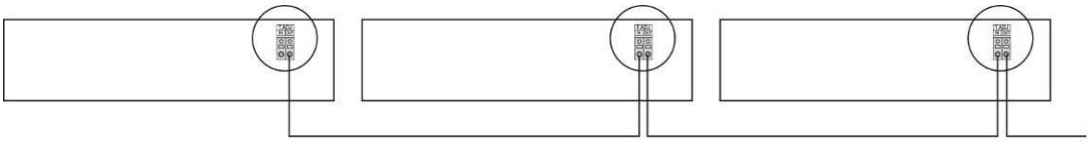
3.3.1 RS-485

No	DESCRIPTION	
1	TA(TX+)	RS485:Transmit data
2	TB(TX-)	RS485: Receive data
3	GND	

3.3.2 TIME ADJUST

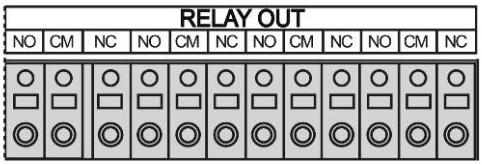


NO	DESCRIPTION	FALLING EDGE
1	TIME REFERENCE INPUT	TTL
2	TIME REFERENCE OUTPUT	



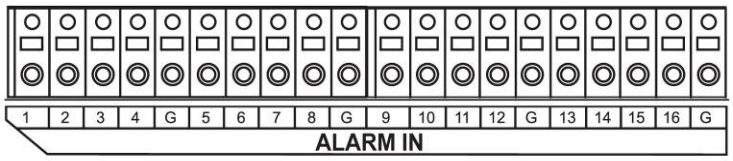
To Other Time Adjust Terminals

3.3.3 RELAY OUTPUT



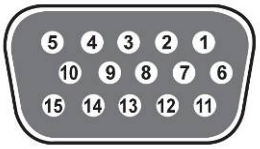
NO	DESCRIPTION		NO	DESCRIPTION	
1	NO(Normal Open)	ALARM	7	NO(Normal Open)	MD
2	CM(Common)		8	CM(Common)	
3	NC(Normal Close)		9	NC(Normal Close)	
4	NO(Normal Open)	V-LOSS	10	NO(Normal Open)	POWER USER NOT USED HDD ERROR
5	CM(Common)		11	CM(Common)	
6	NC(Normal Close)		12	NC(Normal Close)	

3.3.4 ALARM SENSOR INPUT



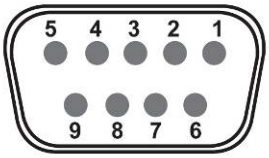
No	DESCRIPTION
1	EXTERNAL ALARM 1 INPUT
2	EXTERNAL ALARM 2 INPUT
3	EXTERNAL ALARM 3 INPUT
4	EXTERNAL ALARM 4 INPUT
G	ALARM IN COMMON GND
5	EXTERNAL ALARM 5 INPUT
6	EXTERNAL ALARM 6 INPUT
7	EXTERNAL ALARM 7 INPUT
8	EXTERNAL ALARM 8 INPUT
G	ALARM IN COMMON GND
9	EXTERNAL ALARM 9 INPUT
10	EXTERNAL ALARM 10 INPUT
11	EXTERNAL ALARM 11 INPUT
12	EXTERNAL ALARM 12 INPUT
G	ALARM IN COMMON GND
13	EXTERNAL ALARM 13 INPUT
14	EXTERNAL ALARM 14 INPUT
15	EXTERNAL ALARM 15 INPUT
16	EXTERNAL ALARM 16 INPUT
G	ALARM IN COMMON GND

3.3.5 VGA PIN LAYOUT



No	DESCRIPTION
1	RED(Red Video [75ohm, 0.7Vp-p])
2	GREEN(Green Video [75ohm, 0.7Vp-p])
3	BLUE(Blue Video [75ohm, 0.7Vp-p])
4~12	Reserved
13	HSYNC or CSYNC(Horizontal or Composite Sync.)
14	VSYNC(Vertical Sync.)
15	Reserved

3.3.6 RS-232C PIN LAYOUT

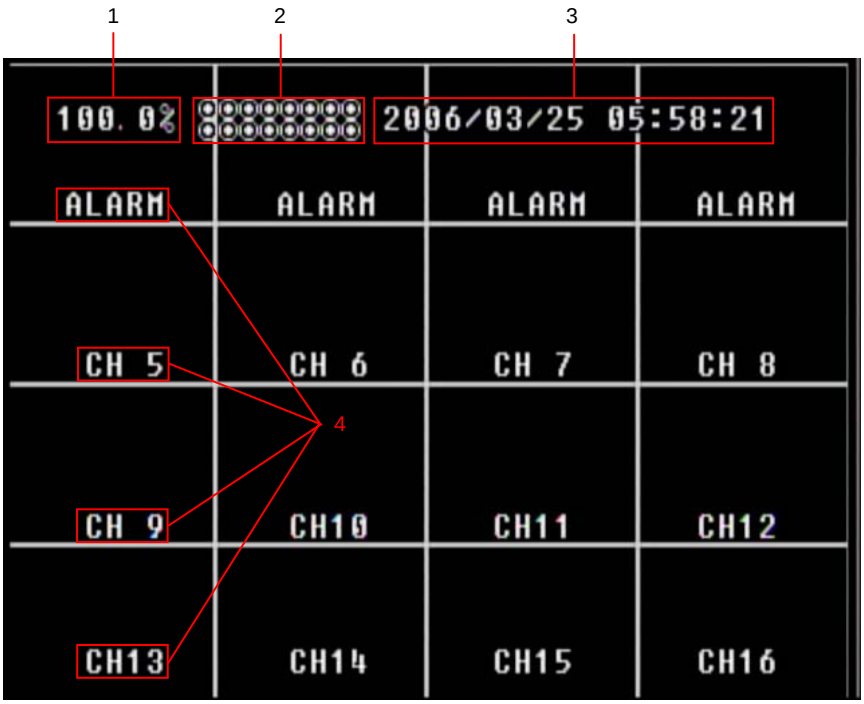


No		Description	No		Description
1	DCD	Data Carrier Detect	6	DSR	Data Set Ready
2	RxD	Receive data	7	RTS	RS232C: RX/TX data
3	TxD	Transmit data	8	CTS	RS232C: RX/TX data
4	DTR	Data Terminal Ready	9	RI	Ring Indicator
5	GND	Signal Ground			

IV. BASIC OPERATION

This section will cover basic features of the DVR, including its main screen and the explanation of some of the alerts. It will also cover the DVR status, the view modes of the DVR, automatic sequence, digital zoom, basic playback modes and audio playback.

4.1 MAIN SCREEN



1. REMAINING HARD DRIVE SPACE / PLAYBACK STATUS

The remaining hard drive space is displayed either in percentage or in Gigabytes. If the hard drive overwrite is set to on, the counter will remain as 0 and the DVR will continue to write on to the hard drive from the beginning. The counter will remain 0 as long as the hard drive is full with previously recorded data, and will display its original size once the hard drive is formatted. In playback mode, it displays the direction and the speed of the playback.

2. Channel STATUS

The status of each channel is displayed in color codes.

- White: non-recording
- Yellow: continuous (manual) recording
- Red: event recording
- Green: schedule recording

3. DATE AND TIME
   Current date and time is displayed when in live monitoring mode. Recorded date and time is displayed when in playback mode.

4. Channel INFORMATION
   The channel information is displayed. When the channel is in normal recording mode, it will display the channel title as entered by the user. When the channel is in event recording mode, it will display the appropriate event recording mode: alarm, motion and video loss.

4.2 STATUS SCREEN

The status screen displays the basic information about the DVR. Press the STATUS button to access the information screen.

[DVR STATUS]
1/2
FIXED HDD TOTAL SPACE : 381564 MBYTES
FIXED HDD FREE SPACE : 42733 MBYTES
BACKUP HDD TOTAL SPACE : 0 MBYTES
BACKUP HDD FREE SPACE : 0 MBYTES
RECORD PROGRAM : PROGRAM0
RECORD TYPE : COMPLEX
SOFTWARE VERSION : 2.87L
HARDWARE VERSION : 0.8

[DVR STATUS]
2/2
DHCP : OFF
IP ADDRESS : 10 0 0 204
SUBNET MASK : 255 255 255 0
GATEWAY : 10 0 0 2
DNS : 0 0 0 0
PORT : 5400
DYNAMIC IP SERVER : 211.174.251.155
BACKUP IP SERVER : 211.174.251.160
MAC ADDRESS : 00 0A 2F 20 11 04
USB STORAGE : NOT INSTALL
USB CD/DVD : INTERNAL
IP SERVER RESPONSE : DISCONNECT

1. FIXED HDD TOTAL SPACE
   Displays the total amount of installed hard drive space, including the hard drive space in the expansion bays.

2. FIXED HDD FREE SPACE
   Displays the available remaining hard drive space, including the hard drive space in the expansion bays.

3. BACKUP HDD TOTAL SPACE
   Displays the total amount of backup hard drive space, including the hard drive space in the expansion bays. Backup hard drive total space will display zero bytes if none of the hard drives is designated as backup hard drives.

4. BACKUP HDD FREE SPACE
   Displays the available remaining backup hard drive space, including the hard drive space in the expansion bays. Backup hard drive total space will display zero bytes if none of the hard drives is designated as backup hard drives.

5. RECORD PROGRAM
   Displays current recording program.

6. RECORD TYPE
   Displays current event recording mode.

7. SOFTWARE VERSION
   Displays current software version of the DVR.

8. HARDWARE VERSION
   Displays current hardware version of the DVR.

9. DHCP (DYNAMIC HOST CONFIGURATION PROTOCOL)
   Displays the status of the DHCP application.

10. IP ADDRESS
    Displays currently assigned IP address.

11. SUBNET MASK
    Displays currently assigned subnet mask.

12. GATEWAY
    Displays currently assigned gateway.

13. DNS (DOMAIN NAME SERVER)
    Displays currently assigned DNS server information.

14. PORT
    Displays currently assigned network port.

15. DYNAMIC IP SERVER
    Displays currently assigned backup IP server.

16. MAC ADDRESS
    Displays the DVR's MAC address (Media Access Control address).

17. USB STORAGE
    Displays the size of the external hard drive space or USB Flash Memory.

18. USB CD / DVD
    Displays the status of installed CD or DVD optical drive.

19. IP SERVER RESPONSE
    Indicates the connectivity status with the IP server.

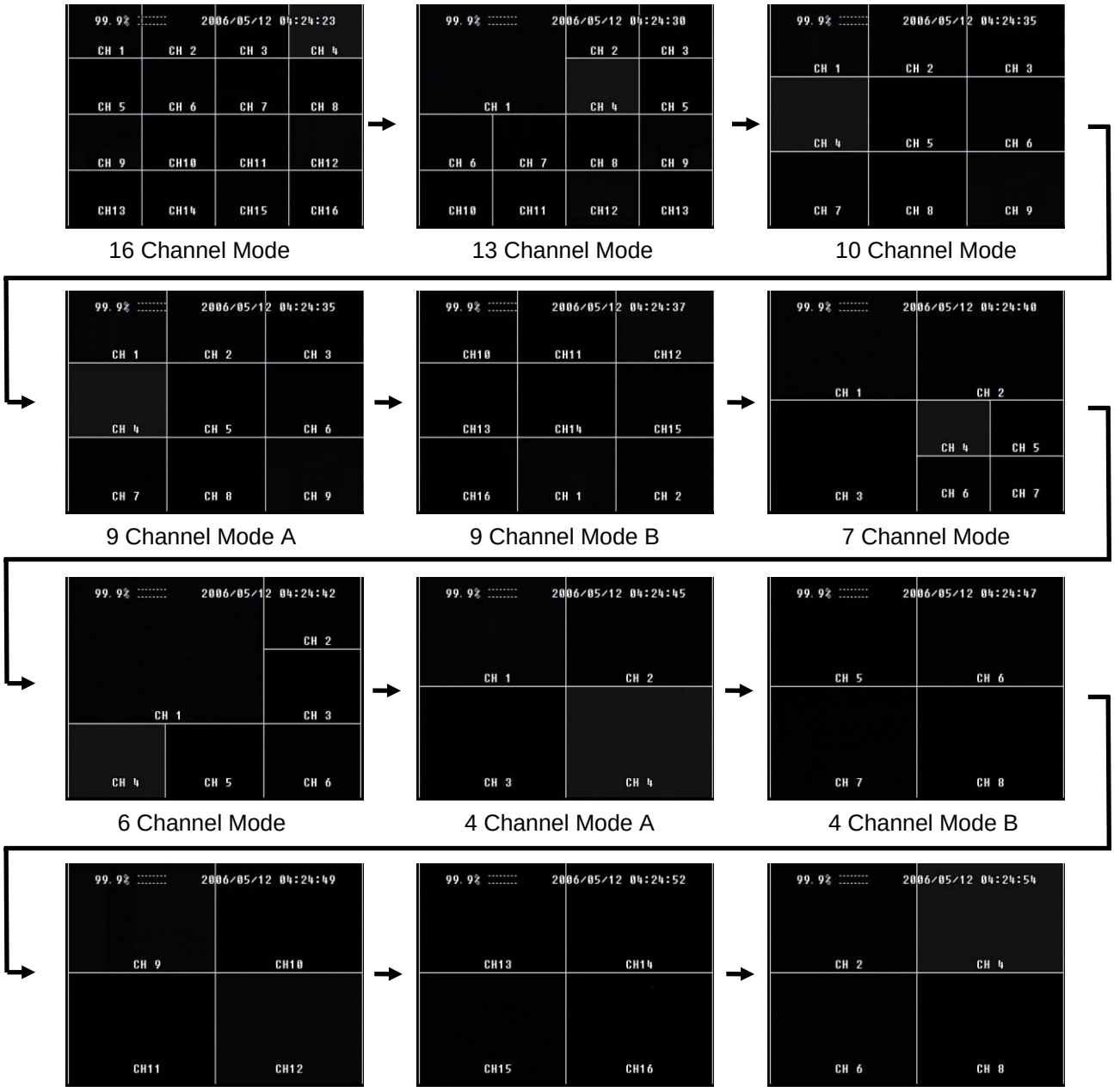
4.3 LIVE VIEW

The live view displays each channel at 30 images per second, for the total of 480 images per second for 16 Channel DVR, 240 images per second for 8 Channel DVR and 120 images per second for 4 Channel DVR.

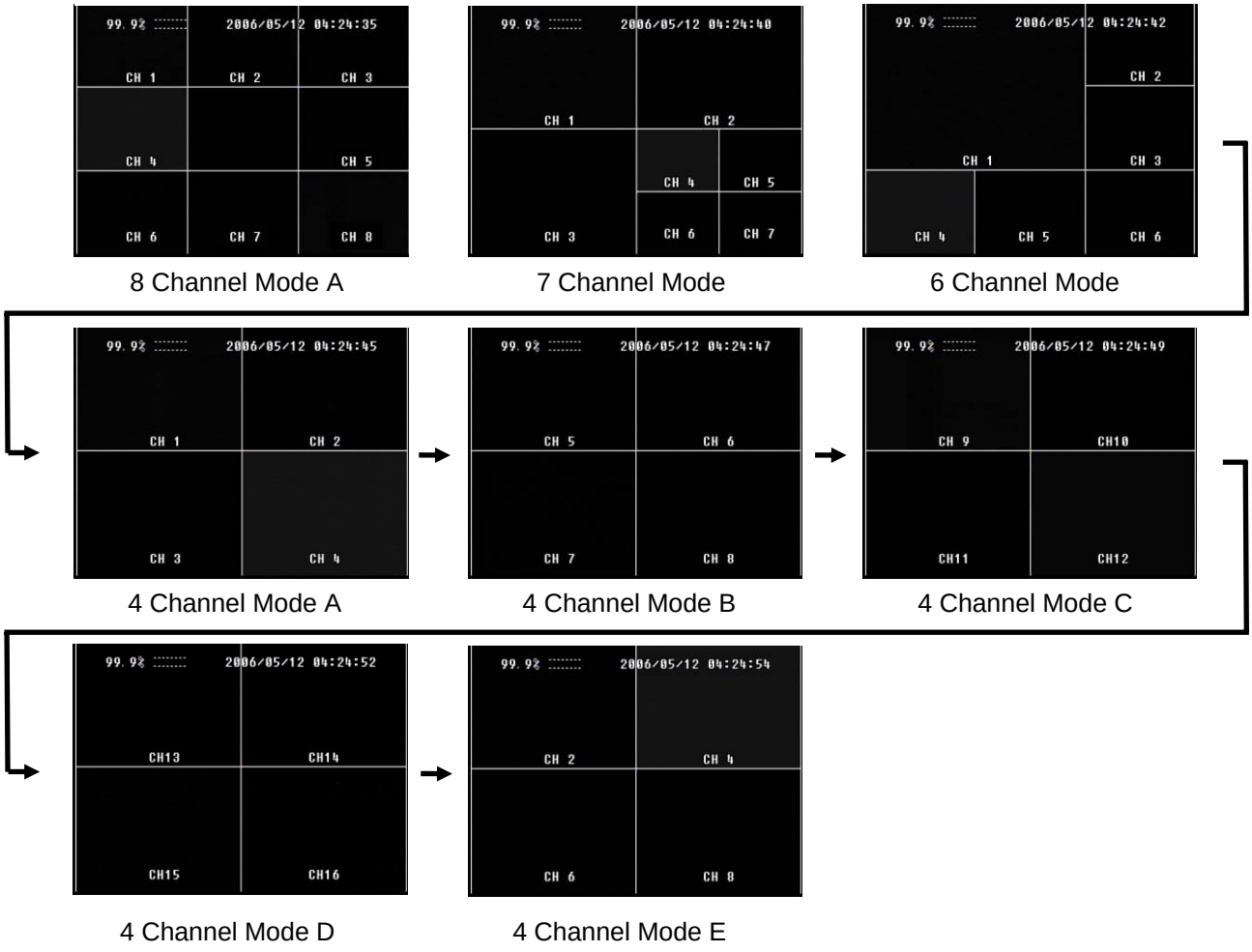
4.3.1 LIVE VIEW MODE SEQUENCE

Press the DISPLAY button to toggle between different view modes.

4.3.1.1 16 Channel DVR



4.3.1.2 8 Channel DVR



4.3.2 FULL SCREEN DISPLAY

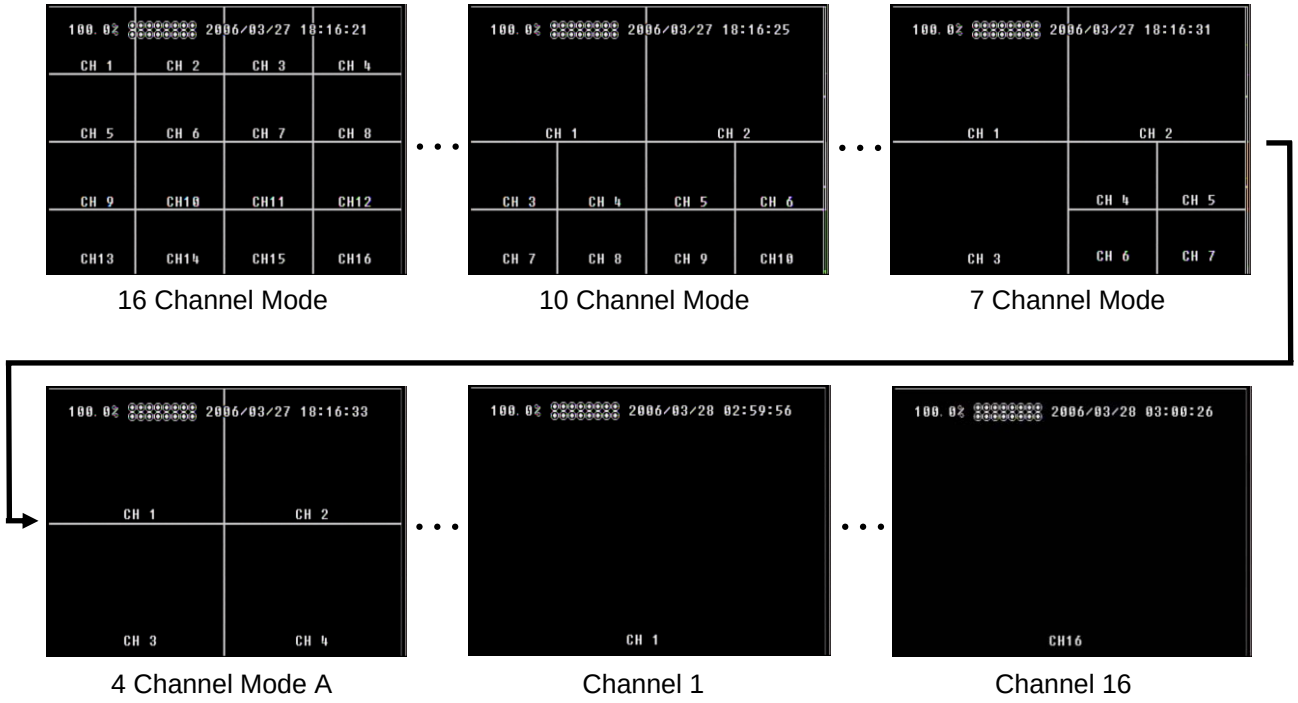
Press the desired channel button to directly display the channel on the monitor. Press +10 then a secondary number for any channel numbers higher than 9.

Press Numeric button 1 to display channel 1.

Press +10 button and then 2 button to display channel 12.

4.3.3 AUTOMATIC SEQUENCE

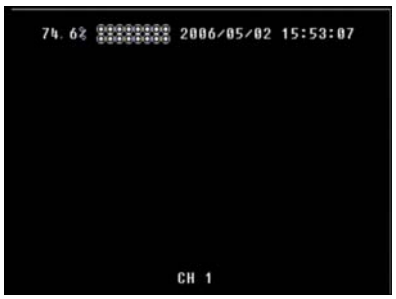
Press the SEQ button to activate the automatic sequence display. Please change “ADD AUTO SINGLE” option to ON to include single channel display into the automatic sequence. Any of the view modes can be skipped by selecting the dwell time to 0.



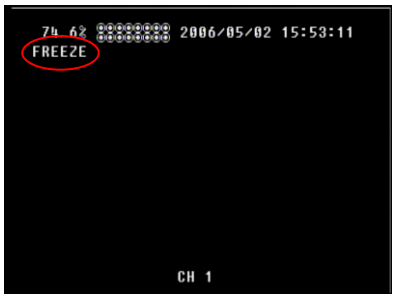
4.4 FREEZE

The freeze function allows the user to freeze the live view mode at any given time. There are two modes in which the freeze function is effective: single screen (full screen) mode and multi-screen mode.

4.4.1 SINGLE SCREEN VIEW MODE



In single screen view mode, press the FREEZE button to freeze the live screen.



As the screen freezes, “FREEZE” will be displayed in the upper left corner of the screen. Press the FREEZE button once more to unfreeze the screen.

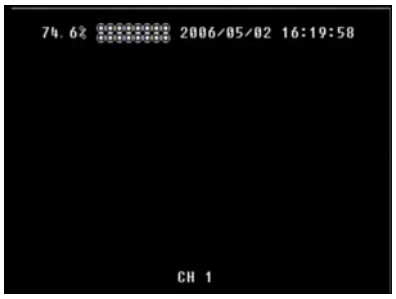
4.4.2 MULTI SCREEN VIEW MODE

In any multi screen view mode, press the FREEZE button and “FREEZE” will be displayed in the upper left corner of the screen. Please note that none of the channels will be frozen immediately.

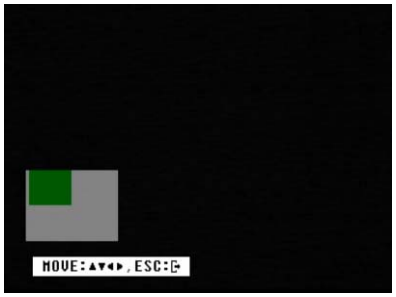
Press the numeric buttons for the channels to be frozen. In the example to the left, channel 2, 3, 5, 7, 8 and 15 have been frozen. Press the numeric buttons for the channels once again to unfreeze them.

4.5 ZOOM

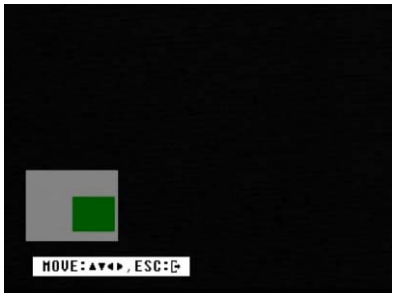
During the live view mode, it is possible to zoom into a section of the screen to get a digital close-up of up to 2 times the normal size.
NOTE: 16 Channel DVR/8 Channel DVR/4 Channel DVR cannot support the zoom function during the playback.



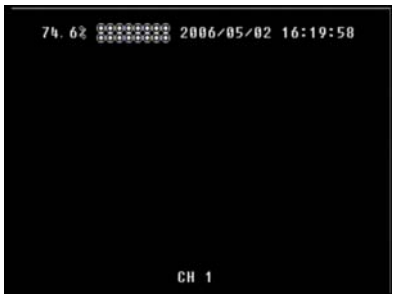
Press the numeric button to select the channel to zoom into.



Press the ZOOM button to enter the zoom mode. The initial zoom ratio is 2X the normal size.

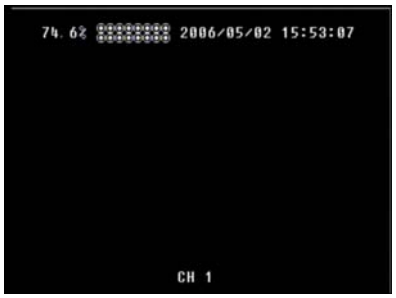


Use the directional buttons to move the zoom window to the desired location.

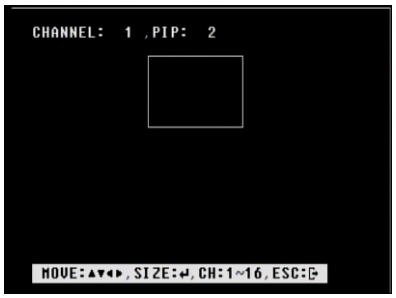


Press the ESC button to exit out of the zoom mode.

4.6 PICTURE-IN-PICTURE



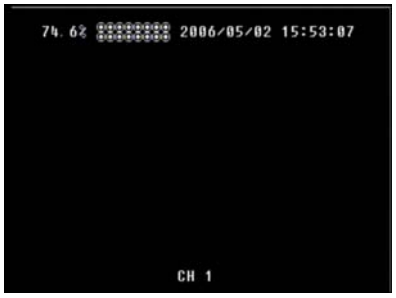
Select the background channel by pressing the desired numeric button.



Press the PIP button to activate the PIP mode.

Pressing the numeric buttons will change the PIP window to change the channel to the desired channel.

Use the directional buttons to place the PIP window to the desired location on the screen.

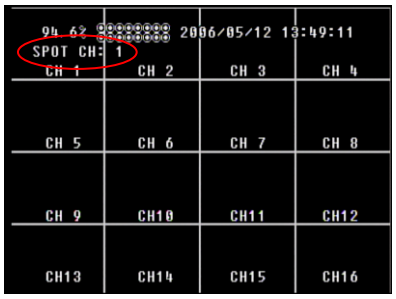


Press the ESC button to exit from the PIP mode.

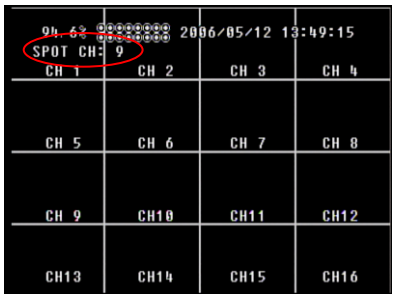
NOTE : If a channel to be set by PIP is set by COVERT, you can't enter the PIP mode.

4.7 SPOT MONITOR

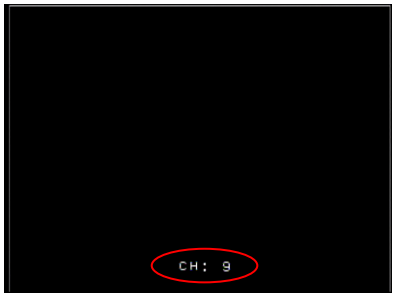
The spot monitor allows viewing of individual cameras in live mode while the main monitor may be busy with different tasks, such as playback. The ST series offers a single channel spot output.



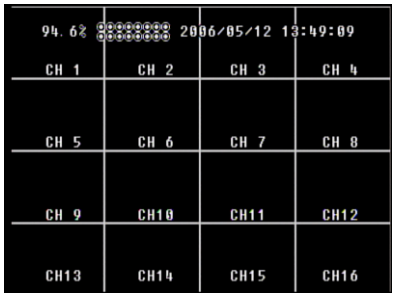
During any view modes, press the SPOT button for Spot Monitor Mode.



Press any channel numbers to display the channel in full screen mode on the spot monitor.



The spot monitor will display the channel accordingly.



Press the SPOT button to exit from Spot Monitor Mode.

4.8 BASIC RECORDING

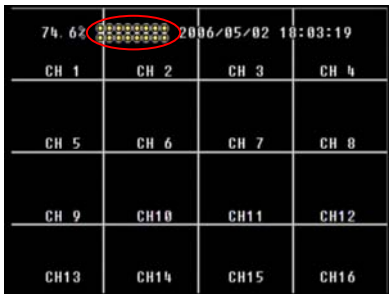
When the REC button is pressed, the DVR uses Program 6, which is the default record setting:

There are total of 10 customizable record programs. Please note that QUICK SETUP supersedes any other recording settings when activated.

The factory default record programs are as follows:

RECORD PROGRAM	0	1	2	3	4	5	6	7	8	9
EVENT TYPE	COMPLEX	SINGLE	SINGLE	COMPLEX	SINGLE	SINGLE	COMPLEX	SINGLE	SINGLE	COMPLEX
EVENT OPTION	CH ONLY	CH ONLY	CH ONLY	CH ONLY	CH ONLY	CH ONLY	CH ONLY	CH ONLY	CH ONLY	CH ONLY
IMAGE SIZE	720X240	360X240	360X240	360X240	720X240	720X240	720X240	720X480	720X480	720X480
NORMAL RECORD	0	7	3	15	5 or 3	2	7	2 or 1	0	5 or 3
EVENT SINGLE	-	7	30	-	15	30	-	15	30	-
EVENT COMPLEX	0	-	-	15	-	-	7	-	-	5 or 3
NORMAL QUALITY	FINE	LOW	FINE	SUPER FINE	LOW	FINE	SUPER FINE	LOW	FINE	SUPER FINE
EVENT QUALITY	FINE	LOW	FINE	SUPER FINE	LOW	FINE	SUPER FINE	LOW	FINE	SUPER FINE
PRE-ALARM	5	5	5	5	5	5	5	5	5	5
POST-ALARM	10	10	10	10	10	10	10	10	10	10
EVENT	A/L/M	A/L/M	A/L/M	A/L/M	A/L/M	A/L/M	A/L/M	A/L/M	A/L/M	A/L/M

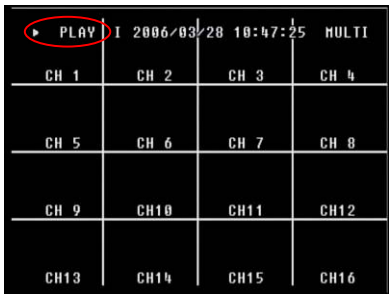
For a detailed explanation of each function and feature, please refer to 6.3.2 RECORD PROGRAM under section 6.3 RECORD SETUP on page 90.



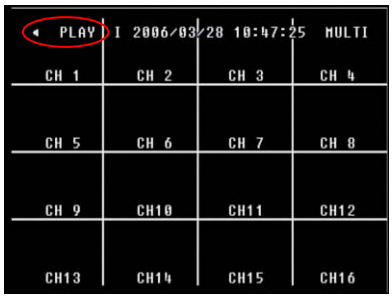
Press the REC button to start recording. The circles representing the channel status will change color based on the recording mode. Press the REC button once again to stop the recording.

4.9 BASIC PLAYBACK

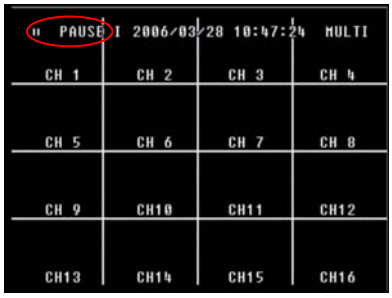
4.9.1 PLAY / REVERSE PLAY / PAUSE / STOP



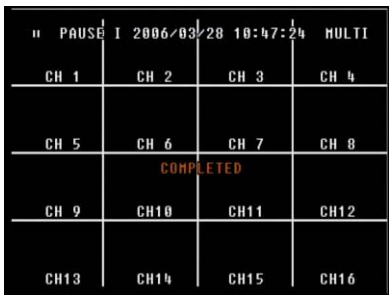
Press the PLAY / PAUSE button and the play icon will be displayed. The DVR starts the playback from the earliest recorded data if the playback mode is entered for the first time.



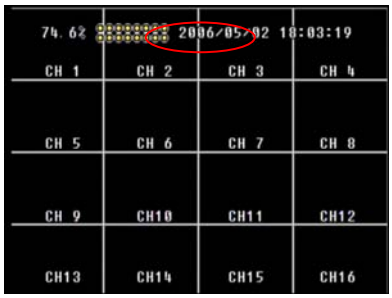
Press the DIRECTION button to change the playback direction.



Press the PLAY / PAUSE button during the playback to pause the playback.



When the playback reaches the end of the recorded data, then the playback will pause automatically.

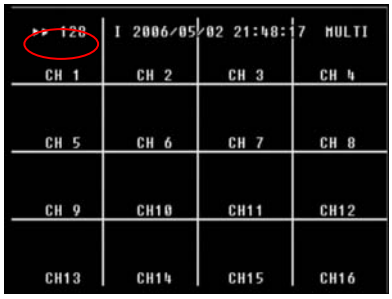


Press the LIVE button to exit to the live view mode.

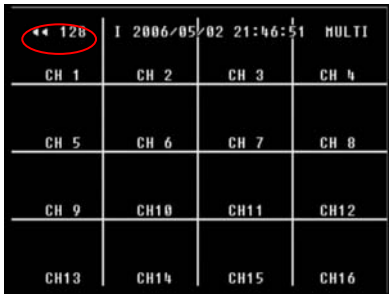
4.9.2 FAST FORWARD / REWIND

During the playback or when the playback is paused, the video can be fast forwarded or rewound in two different methods.

4.9.2.1 Shuttle Ring

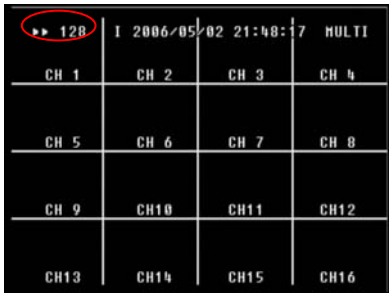


Turn the shuttle ring clockwise to fast forward to the desired location. Each increment on the shuttle ring represents the speed of fast forward on the screen. Starting with 2X speed, each additional increment represents twice the previous speed. The maximum fast forward speed is 128X the normal speed. Releasing the shuttle ring will bring the fast forward to a pause.

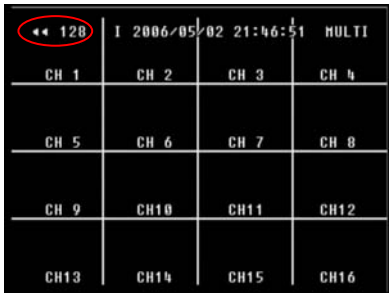


Turn the shuttle ring counter-clockwise to rewind to the desired location. The same speed increment and icon concept is applied for the rewind. Releasing the shuttle ring will bring the rewind to a pause.

4.9.2.2 FAST / DIRECTION button

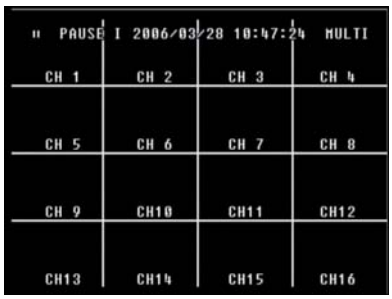


The FAST button accelerates the speed of playback in one direction. Each pressing of the button accelerates the speed twice the previous speed. In other words, from normal speed, the acceleration increment is 2X, 4X, 8X, 16X, 32X, 64X and 128X.

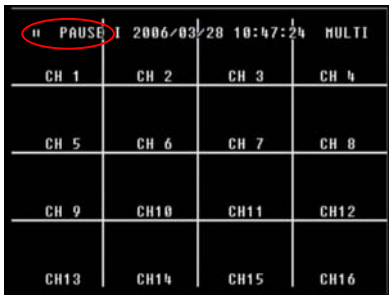


Pressing the DIRECTION button will change the direction of fast forward to rewind while maintaining the same speed.

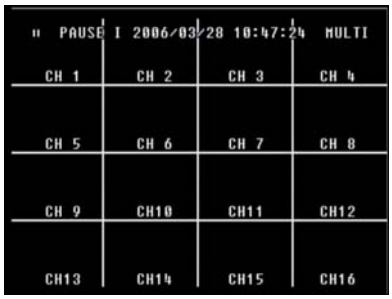
4.9.3 PICTURE-BY-PICTURE



Pause the playback by pressing the PLAY / PAUSE button.

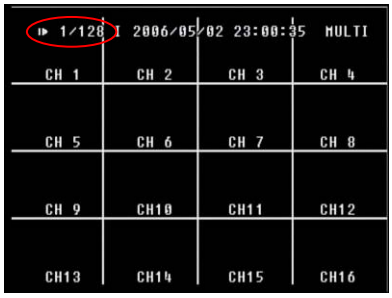


Turn the jog dial clockwise to review and to advance through the recorded data picture-by-picture. If the jog dial is stopped, the playback will return to paused playback mode.

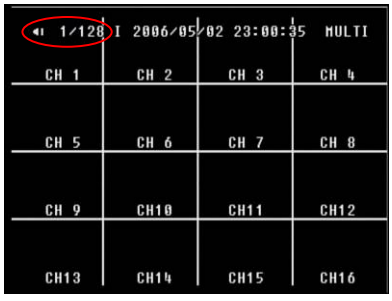


Turn the jog dial counter-clockwise to play in reverse and view recorded data picture-by-picture. If the jog dial is stopped, the playback will return to paused playback mode.

4.9.4 SLOW



The SLOW button slows down the speed of playback in one direction. Each pressing of the button further slows down the speed twice the previous speed. In other words, from normal speed, the slow down increment is 1/2X, 1/4X, 1/8X, 1/16X, 1/32X, 1/64X and 1/128X.

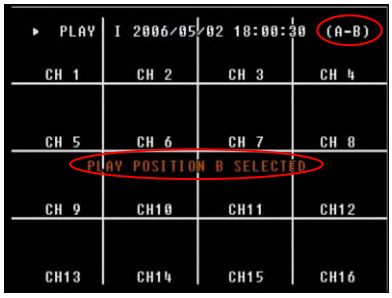


Pressing the DIRECTION button will change the direction of slow playback to the opposite direction while maintaining the same speed.

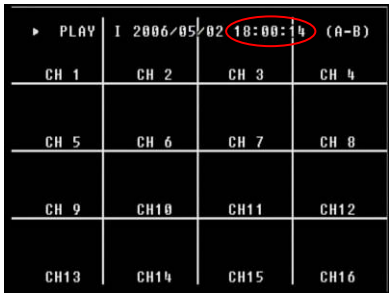
4.9.5 LOOP PLAYBACK

The playback can be marked in two different locations so that it can be looped repeatedly.

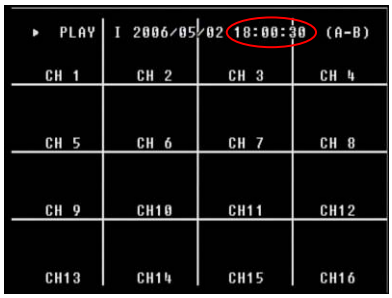
During any playback mode, press the A button to mark the beginning of the loop, POSITION A.



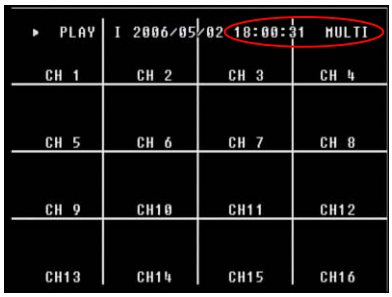
When the desired location is found, press the B button to mark the end of the loop, POSITION B. The desired location can be reached by any playback functions such as fast forward, slow, and etc.



As soon as the end of the loop is marked, then the playback returns to POSITION A.



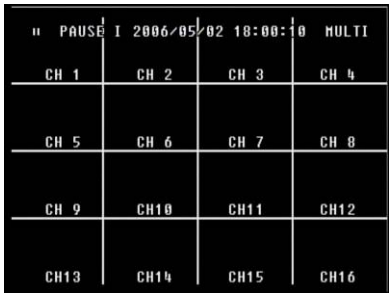
When the end the loop is reached, the playback returns to POSITION A and the loop playback is repeated.



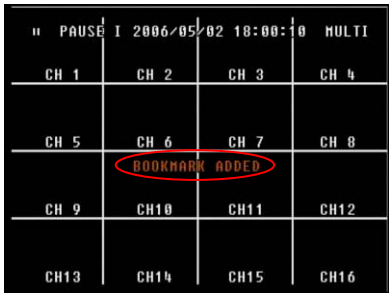
Press the CLEAR button to exit from the loop playback mode.

4.9.6 BOOKMARK

The bookmark provides a quick and easy way to mark the desired location during playback so that it can be easily retrieved for later playback.



During the playback, pause by pressing the PLAY / PAUSE button when the desired location has been reached.



Press the BOOKMARK button to mark the current location.

4.9.7 AUDIO PLAYBACK

The audio is always recorded in real time regardless of the recording speed. To listen into the desired audio channel, press the AUDIO SEL button and then channel button.

By default, the audio will playback along with the equivalent video camera (i.e. channel 1 audio will play back along with channel 1 video).

V. ADVANCED OPERATION

This section will cover advanced features of the DVR such as backup (copy), pan tilt and zoom camera controls, alarm, video loss and motion recording, and various playback search options.

5.1 BACKUP

The DVR is capable of backing up to various media, such as DVD-RW, CD-RW, USB Flash drives, and external hard drives. Please note that besides the optical media, the backup devices must be USB 2.0 compliant and they can be connected to any of the three available USB slots. Every time a backup is made, the mini player will be copied along with the content to facilitate viewing of the backup video on any Windows based personal computers. All backup media will include a multi-channel small viewer.

5.1.1 CD-RW / DVD-RW / DVD+RW / DVD RAM

The DVR is equipped with a DVD multi / CD-RW drive for backups. RW media was specifically chosen because of its unique ability to be used over and over. Data backups can be written to the same RW disk until its maximum capacity is reached. Once capacity is reached, the disk can then be reformatted and reused over and over.

Press the COPY button to enter the COPY screen.

CD-RW, DVD±RW and DVD RAM media must be formatted prior to backup. Select MEDIA FORMAT and then press the ENTER button to access Media Format submenu.

Select INTERNAL CD-RW/DVD by pressing the + or - buttons.

Highlight MEDIA FORMAT, and then press the ENTER button to begin formatting.

FORMATTING will be displayed during the process. The process may take up to approximately 20 minutes depending on the format of the backup disk.

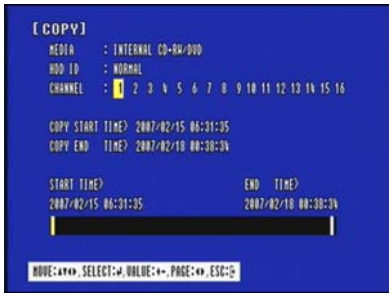
When the process is completed, SUCCESS will be displayed.

Press the ESC button to return to the previous menu.

Highlight COPY and then press the ENTER button to access the copy submenu.

[COPY]
MEDIA : INTERNAL CD-RW/DVD
HDD ID : NORMAL
CHANNEL : 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
COPY START TIME) 2007/02/15 06:31:35
COPY END TIME) 2007/02/18 00:30:34
START TIME)
2007/02/15 06:31:35
END TIME)
2007/02/18 00:30:34

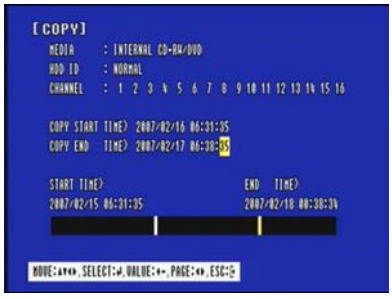
Select the location of the file to be backed up from. If the location is unknown, leave the HDD ID on NORMAL.


[COPY]
MEDIA : INTERNAL CD-RW/DVD
HDD ID : NORMAL
CHANNEL : 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
COPY START TIME) 2007/02/15 06:31:35
COPY END TIME) 2007/02/18 00:30:34
START TIME)
2007/02/15 06:31:35
END TIME)
2007/02/18 00:30:34

Select the channels to be backed up. By default, all channels are selected. To exclude a channel, highlight a channel number and then switch them to "--".

[COPY]
MEDIA : INTERNAL CD-RW/DVD
HDD ID : NORMAL
CHANNEL : 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
COPY START TIME) 2007/02/15 06:31:35
COPY END TIME) 2007/02/18 00:30:34
START TIME)
2007/02/15 06:31:35
END TIME)
2007/02/18 00:30:34

The beginning and the end of the available files are listed automatically as shown on the left.

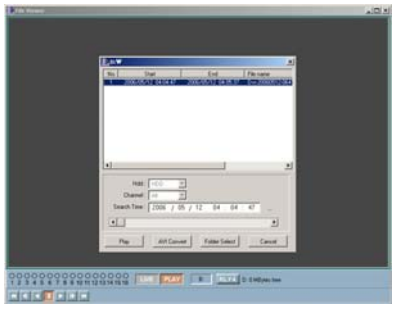

[COPY]
MEDIA : INTERNAL CD-RW/DVD
HDD ID : NORMAL
CHANNEL : 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
COPY START TIME) 2007/02/16 06:31:35
COPY END TIME) 2007/02/17 06:30:34
START TIME)
2007/02/15 06:31:35
END TIME)
2007/02/18 00:30:34

Select the beginning time and the end time of the period to be backed up, and then press the ENTER button to start the backup.

When prompted, enter an eight digit numeric password to encrypt the backup. This password will be needed to later retrieve the data. Data encryption can be bypassed by pressing the ESC button.

The backup progress is displayed on the right upper corner of the screen, and will disappear automatically when the backup process is finished.

The backup disk can be reformatted and reused over and over.



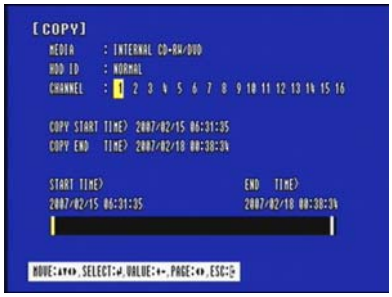
Insert the CD into the CD-ROM or DVD-ROM of a computer, and the small player will load automatically showing all available data for playback.

5.1.2 CD-R

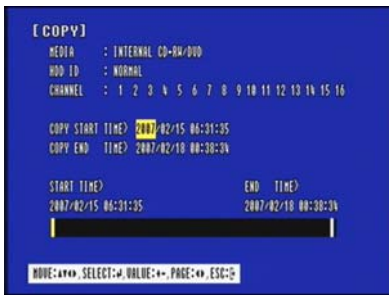
Highlight COPY and then press the ENTER button to access the copy submenu.

[COPY]
MEDIA : INTERNAL CD-RW/DVD
HDD ID : NORMAL
CHANNEL : 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
COPY START TIME) 2007/02/15 06:31:35
COPY END TIME) 2007/02/18 00:38:34
START TIME)
2007/02/15 06:31:35
END TIME)
2007/02/18 00:38:34

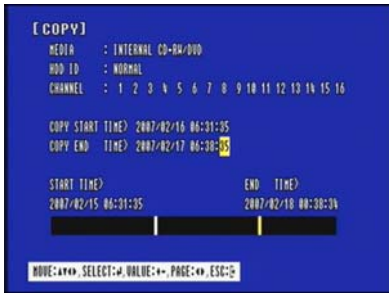
Select INTERNAL CD-RW/DVD by pressing the + or – button.


[COPY]
MEDIA : INTERNAL CD-RW/DVD
HDD ID : NORMAL
CHANNEL : 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
COPY START TIME) 2007/02/15 06:31:35
COPY END TIME) 2007/02/18 00:38:34
START TIME)
2007/02/15 06:31:35
END TIME)
2007/02/18 00:38:34

Select the channels to be backed up. By default, all channels are selected. To exclude a channel, highlight a channel number and then switch them to "--".

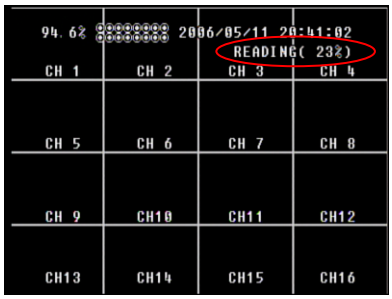

[COPY]
MEDIA : INTERNAL CD-RW/DVD
HDD ID : NORMAL
CHANNEL : 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
COPY START TIME) 2007/02/15 06:31:35
COPY END TIME) 2007/02/18 00:38:34
START TIME)
2007/02/15 06:31:35
END TIME)
2007/02/18 00:38:34

The beginning and the end of the available files are listed automatically as shown on the left.

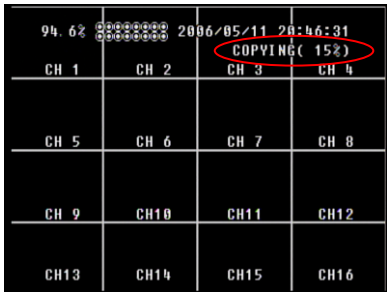

[COPY]
MEDIA : INTERNAL CD-RW/DVD
HDD ID : NORMAL
CHANNEL : 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
COPY START TIME) 2007/02/16 06:31:35
COPY END TIME) 2007/02/17 06:38:35
START TIME)
2007/02/15 06:31:35
END TIME)
2007/02/18 00:38:34

Select the beginning time and the end time of the period to be backed up, and then press the ENTER button to start the backup.

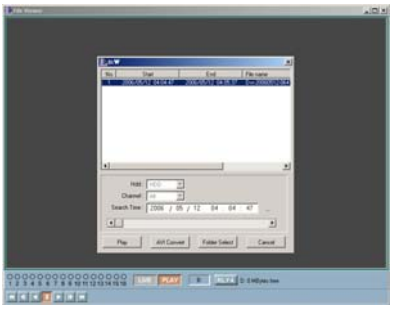
When prompted, enter an eight digit numeric password to encrypt the backup. This password will be needed to later retrieve the data. Data encryption can be bypassed by pressing the ESC button.



The DVR will start creating a buffer for the selected data to be backed up. The status of the buffer being created will be displayed in the upper right corner of the screen.



The backup progress is displayed on the right upper corner of the screen, and will disappear automatically when the backup process is finished.



Insert the CD into the CD-ROM or DVD-ROM of a computer, and the small player will load automatically showing all available data for playback.

5.1.3 USB FLASH MEMORY

The USB 2.0 flash memory comes in various sizes, up to 8 Gigabytes of storage per flash memory. It is much faster in comparison to optical media when it comes to copying necessary files. The following manufacturers' models have been tested to be fully compatible with the DVR.

- SANDISK Cruzer Mini – all capacities
- SANDISK Cruzer Micro – all capacities
- LEXAR JumpDrive Lightening – all capacities
- MEMOREX TravelDrive – all capacities
- I/O MAGIC Giga Bank – all capacities
- PNY – all capacities

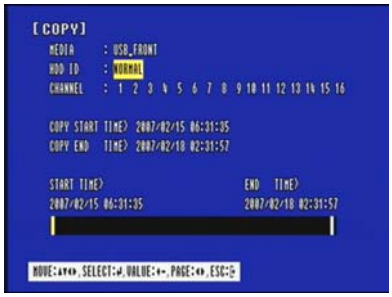
As the compatibility is continuously being tested, please check with the seller before using non-listed manufacturers' models.

Insert the flash memory into any available USB 2.0 port. The flash memory will light up as it draws power from the DVR.

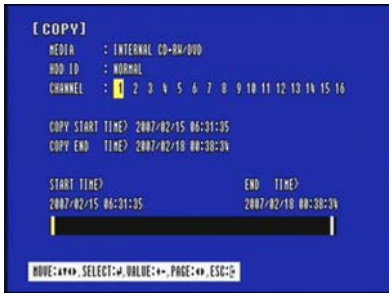
Press the COPY button to enter the COPY submenu.

Highlight COPY, then press the ENTER button to enter the COPY screen.

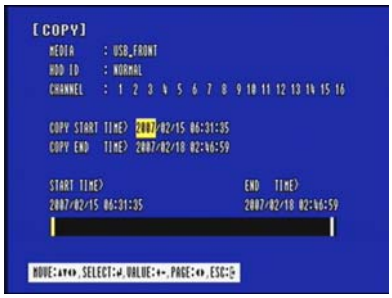
Select the location of the USB flash memory. The example to the left has selected the front USB port.



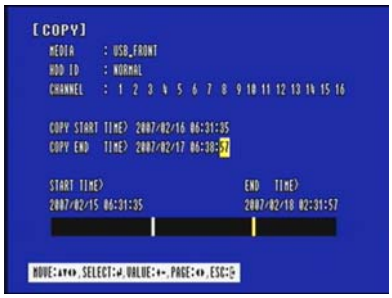
Select the location of the file to be backed up from. If the location is unknown, leave the HDD ID on NORMAL.


[COPY]
MEDIA : INTERNAL CD-RW/DVD
HDD ID : NORMAL
CHANNEL : 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
COPY START TIME 2007/02/15 06:31:35
COPY END TIME 2007/02/18 00:38:34
START TIME
2007/02/15 06:31:35
END TIME
2007/02/18 00:38:34

Select the channels to be backed up. By default, all channels are selected. To exclude a channel, highlight a channel number and then switch them to "--".



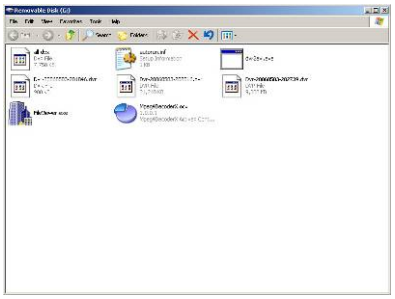
The beginning and the end of available file are listed automatically as shown on the left.



Select the beginning time and the end time of the period to be backed up, and then press the ENTER button to start the backup.

When prompted, enter an eight digit numeric password to encrypt the backup. This password will be needed to later retrieve the data. Data encryption can be bypassed by pressing the ESC button.

The backup progress is displayed on the right upper corner of the screen, and will disappear automatically when the backup process is finished.



The copied files are listed as “Dvr-20060503-202016.dvr”. They can be retrieved and played back using the client software, or the embedded program – “FileViewer.exe”.

5.1.4 EXTERNAL HARD DISK DRIVE

Follow the same procedure as the USB flash memory in section 5.1.3.

5.1.5 COPY STATUS

During any backup process, a detailed description of the copy process can be viewed. Copy status will display the start and end of the data to be backed up, and the current time of the data being copied.

Press the COPY button to enter the COPY submenu.

Highlight COPY STATUS and then press the ENTER button to see the copy status.

Displays the current copy status.

5.1.6 COPY STOP

The backup process can be interrupted at any time during the process.

Press the COPY button to enter the COPY submenu.

Highlight COPY and then press the ENTER button to access the copy submenu.

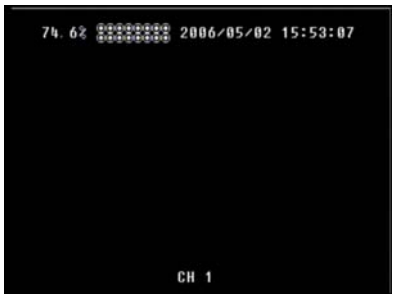
Instead of the normal copy submenu, the DVR will display an option to stop the backup process.

Highlight YES and then press the ENTER button to stop the backup process.

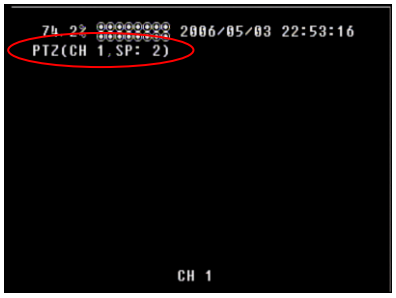
5.2 PAN / TILT / ZOOM CAMERA CONTROL

The DVR comes with an extensive list of compatible PTZ cameras. Please read and follow the PTZ manufacturer's instruction manual and understand its settings fully prior to proceeding to attempt to connect and control the PTZ camera through the DVR. Please refer to PTZ model selection under 6.6.4 PTZ under 6.6 LINK SETUP on page 121.

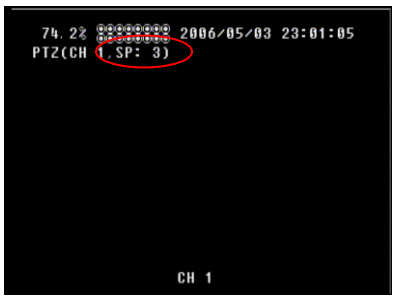
5.2.1 BASIC PAN / TILT / ZOOM CONTROL



Select the desired channel by pressing the numeric button for the full screen view.

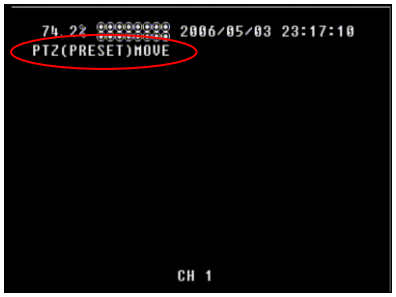


Press the PTZ button to enter the PTZ camera control mode. Use the directional buttons for the pan and tilt movement, +/- buttons to focus in/out, or AF button for auto focus, and the shuttle ring to zoom in and out.



The movement speed of the PTZ camera can be changed by pressing the FUNCTION button and then the + or – button to increase or decrease the speed.

5.2.2 CREATING AND MOVING TO PRESET POINTS



During the PTZ control mode, press the PRESET button to activate the PTZ(PRESET)MOVE mode. If there are any preset points predefined, pressing a numeric button will move the PTZ camera to the preset points. A total of 16 preset points can be recalled.

If there are no preset points predefined, then press the PRESET button once again to activate PTZ(PRESET)SET mode. Move the PTZ camera to the desired location, then press the numeric buttons to define the numbers to the locations. A total of 16 preset points can be defined.

5.3 ADVANCED RECORDING

Advanced recording is comprised of customizing various event recording options such as alarm, video loss and motion. Event recording maximizes recording time with the available storage space. Event recording can also utilize the backup mode hard drives *in addition* to normal recording hard drives for duplicate copies of the events. For more information, please refer to 6.3.7 BACKUP MODE under 6.3 RECORD SETUP on page 98.

Prior to activating event recording, please verify that event options are activated in either the QUICK SETUP menu or the RECORD PROGRAM menu. Please note that if QUICK SETUP is not used, then certain parameters in the EVENT menu must be activated for the event recording to work properly. Moreover, please verify that the proper program number is being used under RECORD SETUP.

There are two methods for event recording. The first method is recording events *in addition* to manual recording, and the second method is event recording only. The first method involves leaving the REC button on to start recording manually and combining event recording. This would be useful in a scenario where a location needs to be recorded continuously even at a very minimal recording speed, but when an event is triggered, the recording speed is boosted to the desired pictures per second. The second method involves leaving the REC button off so that only events are recorded.

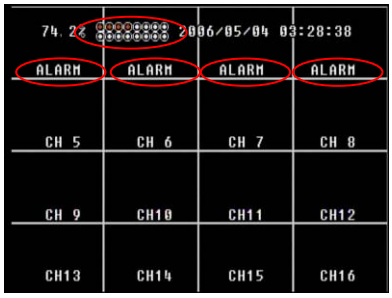
The following settings will assume that the second method is used for event recording. With either method, the events will trigger the designated relays and send out notification e-mails if the e-mail addresses have been defined. Please see 6.4.8 RELAY

OUTPUT under 6.4 EVENT SETUP section on page 104 and 6.6.5 E-MAIL under 6.6 LINK SETUP on page 122.

5.3.1 ALARM RECORDING

Alarm recording is a form of event recording that triggers off of the circuit lines connected to the terminal blocks in the rear of the DVR. Typical circuits comprise of normally closed circuits (NC) and normally open circuits (NO).

Verify that the alarm option has been selected in either QUICK SETUP or RECORD PROGRAM.



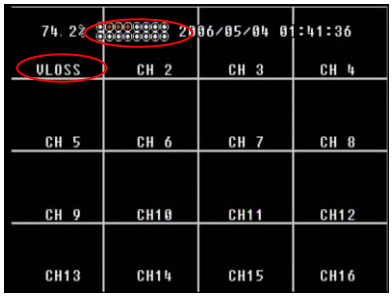
The channels on which the alarm is triggered will display the “ALARM” message. The REC button will light up as the DVR starts to record and the channel status will change to red.

The recording will include the pre and post recording time on the channels that are recording.

5.3.2 VIDEO LOSS RECORDING

Video loss recording is a form of event recording that is triggered when a channel loses its video input signal. Video loss recording is useful to have other channels compensate for the loss of the video signal on a specific channel. For example, when a video loss occurs on channel 1, then the DVR can start recording on channel 2, 3 and 4. Moreover, the channel which loses the video signal will retain the last five seconds of the video to retain what occurred before the video loss.

Verify that the video loss option has been selected in either QUICK SETUP or RECORD PROGRAM.



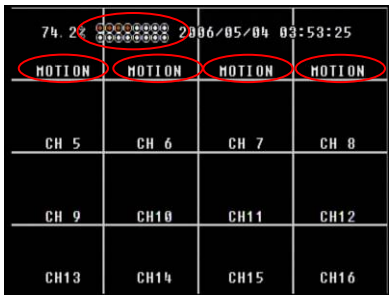
The channel on which the video loss occurred will display the “VLOSS” message. The REC button will light up as the channels that are designated to record when a specific channel has a video loss start recording.

On the example to the left, channels 2, 3 and 4 are designated to record when channel 1 goes out.

The recording will include the pre and post recording time on the channels that are recording.

5.3.3 MOTION RECORDING

Motion recording is yet another effective form of event recording that is triggered when a channel detects motion in its field of view as the MPEG compression algorithm allows for accurate and error-free motion detection..



The channels which detect motion will display the "MOTION" message. The REC button will light up and the channel status will change the color to red in the channels in which the motion was detected.

The recording will include the pre and post recording time on the channels that are recording.

5.4 ADVANCED PLAYBACK

To find and access the recorded data more efficiently, the DVR provides various search modes: calendar search, search & copy, time search, event search, block search, file search, bookmark search and text search.

5.4.1 CALENDAR SEARCH

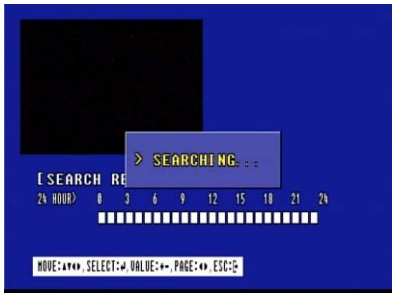
Calendar search provides a quick overview of the year, month, day and hours of the day so that the data can be accessed relatively quickly.

Press the SEARCH button to access the search screen.

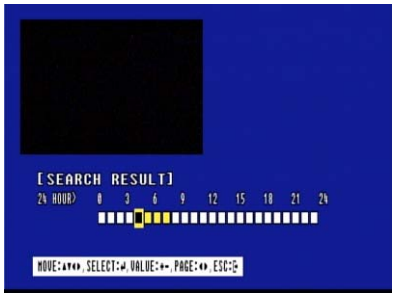
Highlight CALENDAR SEARCH and press the ENTER button to access the CALENDAR SEARCH screen. It will start searching for the data automatically.

The dates that contain recorded data will be displayed in clear font, whereas dates without data will be in white.

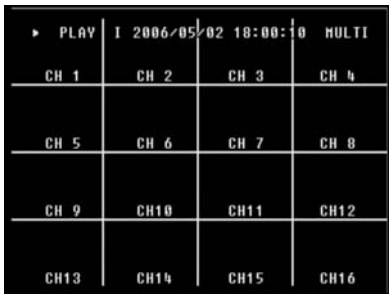
Select the desired date and then press the ENTER button. To change the month or the year, highlight the month or the year and then adjust the value by pressing the + and – buttons.



When a date is selected, the DVR will then search again for the recorded data in a 24-hour period for the date.



The hour blocks that contain data will be displayed in yellow. Move the highlight to the desired hour block and then press the ENTER button to start the playback.



Maneuver through the playback as needed. Please see 4.9 BASIC PLAYBACK on page 42.

5.4.2 SEARCH & COPY

Search & copy allows a quick review of the recorded data and backup onto a medium, and thus minimizes the need to navigate through different screens to pinpoint the exact time and duration of the video.

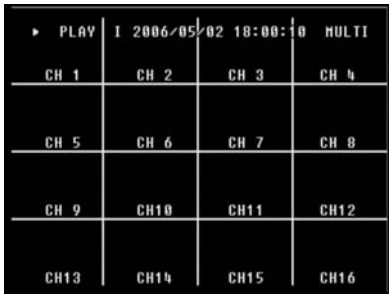
Press the SEARCH button to access the search screen.

Highlight SEARCH & COPY and then press the ENTER button to access the SEARCH & COPY screen.

Select which hard disk drive to retrieve the data from. If unknown, leave the HDD ID to “NORMAL”.

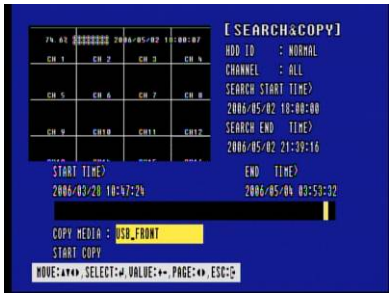
Select the year, month, date, hour, minutes and seconds of the beginning of the data to retrieve. As the values change, the picture in the preview window will change accordingly.

If any of the channels need to be viewed in full screen mode, highlight Channel and then press the + or – button to view a specific channel.



Press the ENTER button and the playback will begin.

Maneuver through the playback as needed. Please see 4.9 BASIC PLAYBACK on page 42.



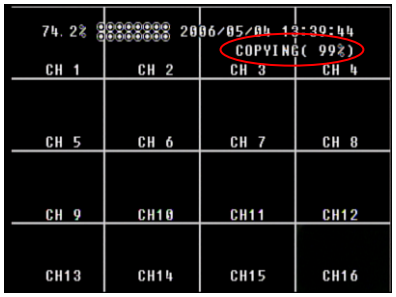
When the desired footage has been found, press ESC to return to SEARCH & COPY screen. The SEARCH END TIME reflects where the DVR stopped the playback and COPY MEDIA has been highlighted automatically for the backup medium selection.

Select the desired backup medium by pressing the + and – button.

Highlight START COPY and then press the ENTER button to start the backup procedure.

When prompted, enter an eight digit numeric password to encrypt the backup. This password will be needed to later retrieve the data. Data encryption can be bypassed by pressing the ESC button.

When the password has been entered, “SAVE NEW COPY PASSWORD” will appear. The same message appears even if the ESC button has been pressed.



The backup process will begin and the progress will be displayed in the upper right hand corner of the screen.

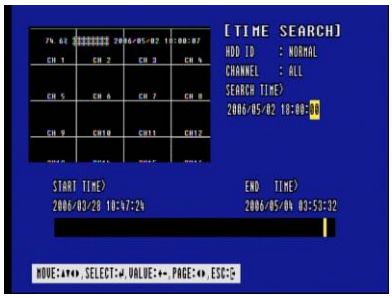
5.4.3 TIME SEARCH

Time search provides an overview of the recorded data from the earliest available recording to the latest available recording.

Press the SEARCH button to access the search screen.

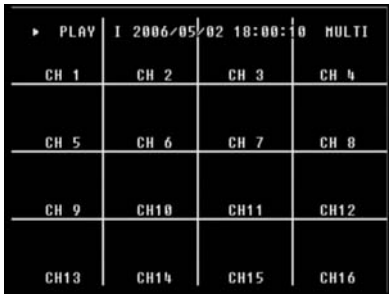
Highlight TIME SEARCH and then press the ENTER button to access the TIME SEARCH screen.

Select which hard disk drive to retrieve the data from. If unknown, leave the HDD ID on “NORMAL”.



Select the year, month, date, hour, minutes and seconds of the beginning of the data to retrieve. As the values change, the picture in the preview window will change accordingly.

If any of the channels need to be viewed in full screen mode, highlight Channel and then press the + or – button to view a specific channel.



Press the ENTER button and the playback will begin.

Maneuver through the playback as needed. Please see 4.9 BASIC PLAYBACK on page 42.

5.4.4 EVENT SEARCH

Event search provides an overview of the all event related recordings so that a specific event can be quickly pinpointed and accessed.

Press the SEARCH button to access the search screen.

Highlight EVENT SEARCH and then press the ENTER button to access the EVENT SEARCH screen.

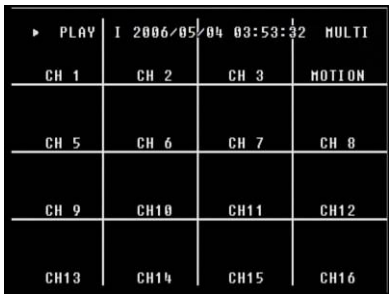
Select which hard disk drive to retrieve the data from. If unknown, leave the HDD ID on “NORMAL”.

if any of the channels need to be viewed in full screen mode, highlight Channel and then press the + or – button to view a specific channel.

Select the event type by pressing the + and – button.

Select the year, month, date, hour, minutes and seconds of the end of the data to retrieve. As the values change, the picture in the preview window will change accordingly. If all events need to be searched up to the present time, leave the time as is.

Press the ENTER button and the list of events will appear in chronological order, from the most recent to the oldest.



Select the event and then press the ENTER button to start the playback. The example to the left is playing back motion triggered recording.

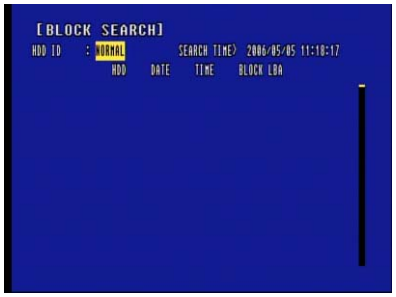
Maneuver through the playback as needed. Please see 4.9 BASIC PLAYBACK on page 42.

5.4.5 BLOCK SEARCH

Block search has the capability to retrieve the recorded data even from hard drives that may have failed during the operation. Block search reads the logical block addressing (LBA) of the hard disk drives where the recorded data are associated chronologically with the actual location of the files. In other words, even if the hard drives are damaged, it may be possible to retrieve data from the hard disk drives.

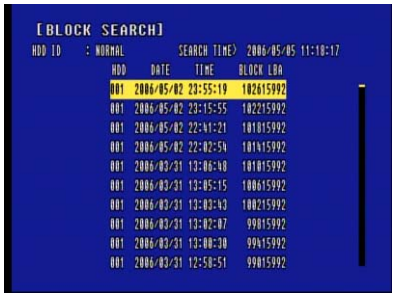
Press the SEARCH button to access the search screen.

Highlight BLOCK SEARCH and then press the ENTER button to access the BLOCK SEARCH screen.

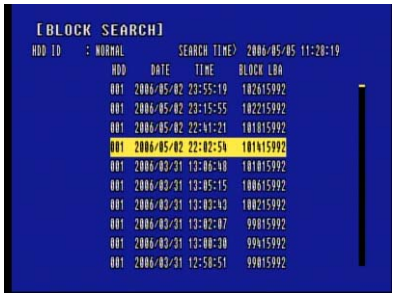


Select the hard disk drive to retrieve the data from. If unknown, leave the HDD ID on NORMAL.

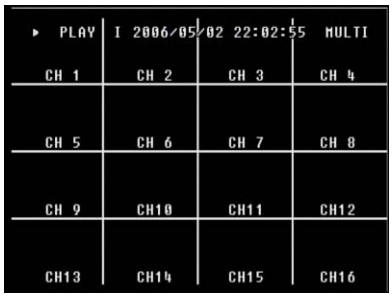
Select the year, month, date, hour, minutes and seconds of the *end* of the data to be retrieved.



Press the ENTER button and the list of data will appear in chronological order, from the most recent to the oldest. The data is associated with the logical block address of the hard disk drives.



Select the date and time and then press the ENTER button to start the playback.



Maneuver through the playback as needed. Please see 4.9 BASIC PLAYBACK on page 42.

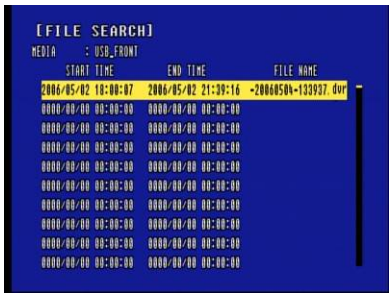
5.4.6 FILE SEARCH

File search is capable of reading and playing back the data from the media used for backup. Insert the CD-R, CD-RW, DVD±RW or DVD RAM media into the installed CD-RW or DVD multi or connect the USB flash memory or the external hard disk drive into the USB port.

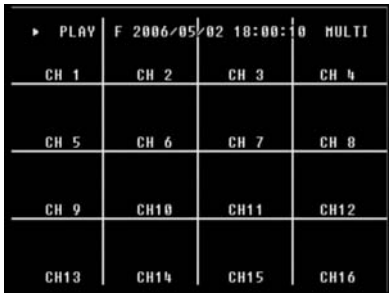
Press the SEARCH button to access the search screen.

Highlight FILE SEARCH and then press the ENTER button to access the FILE SEARCH screen.

Select which medium to retrieve the data from by using the + or – button.



Press the ENTER button and the list of data will appear in chronological order, from the oldest to the most recent.



Select the data and then press the ENTER button to start the playback.

Maneuver through the playback as needed. Please see 4.9 BASIC PLAYBACK on page 42.

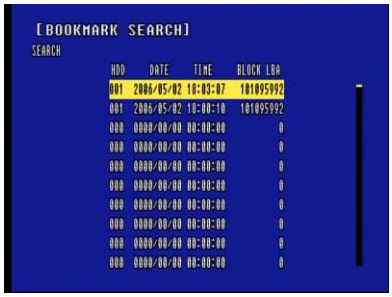
5.4.7 BOOKMARK SEARCH

Bookmark search looks up any bookmarks that have been added by the user. Please see 4.9.6 BOOKMARK under 4.9 BASIC PLAYBACK on page 46.

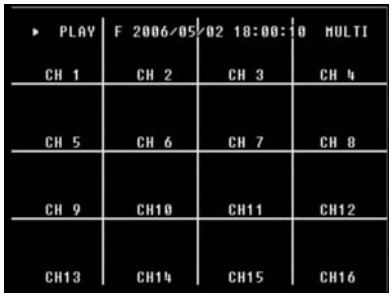
Press the SEARCH button to access the search screen.

Highlight BOOKMARK SEARCH and then press the ENTER button to access the BOOKMARK SEARCH screen.

Press the ENTER button to search for the list of bookmarks.



Select the bookmark, and then press the ENTER button to start the playback.



Maneuver through the playback as needed. Please see 4.9 BASIC PLAYBACK on page 42.

5.4.8 TEXT SEARCH

Text search allows searching for Point Of Sales interface entries to bring up the specific time related to a transaction.

Press the SEARCH button to access the search screen.

Highlight TEXT SEARCH and then press the ENTER button to access Text Search submenu.

Select the hard disk drive to retrieve the data from. If unknown, leave the HDD ID on NORMAL.

Select the channel in which to search for the text string.

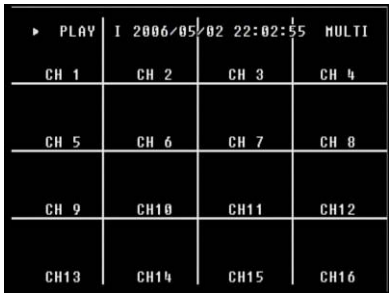
Select the year, month, date, hour, minutes and seconds of the *end* of the search time.

Highlight TEXT and then press the ENTER button to enter the text string to search.

Enter the text to be searched. Leave black for a wild card (all item) search.

Move the highlight to any location besides TEXT, and then press the enter button to list the results.

Highlight an entry, and then press the ENTER button to start playback.



Maneuver through the playback as needed. Please see 4.9 BASIC PLAYBACK on page 42.

5.4.9 LOG FILE

The log file keeps a list of the important events that happened to the DVR. The log file can be saved to a USB flash memory as a text file so that it can be viewed and archived to a computer. The following are what the DVR keeps in its log file:

- Power on / off
- Power loss / DVR restart
- Changes in the menu
- DVR initialization
- HDD initialization
- Network connection / disconnection
- Record start / stop

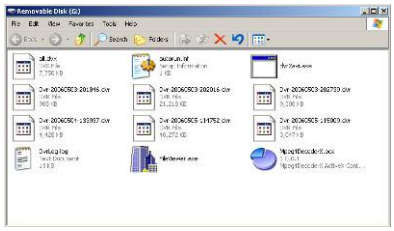
Press the SEARCH button to access the search screen.

Highlight LOG FILE and then press the ENTER button to access the LOG FILE list.

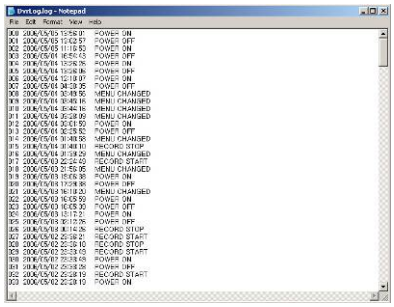
Select the year, month, date, hour, minutes and seconds of the *end* of the log list to retrieve.

Press the ENTER button and the log list will be listed in chronological order, from the most recent to the oldest.

Press the ESC button and highlight SAVE LOG and then press the ENTER button to save the log file onto a USB flash memory. The USB flash memory *must* be in the front USB port.



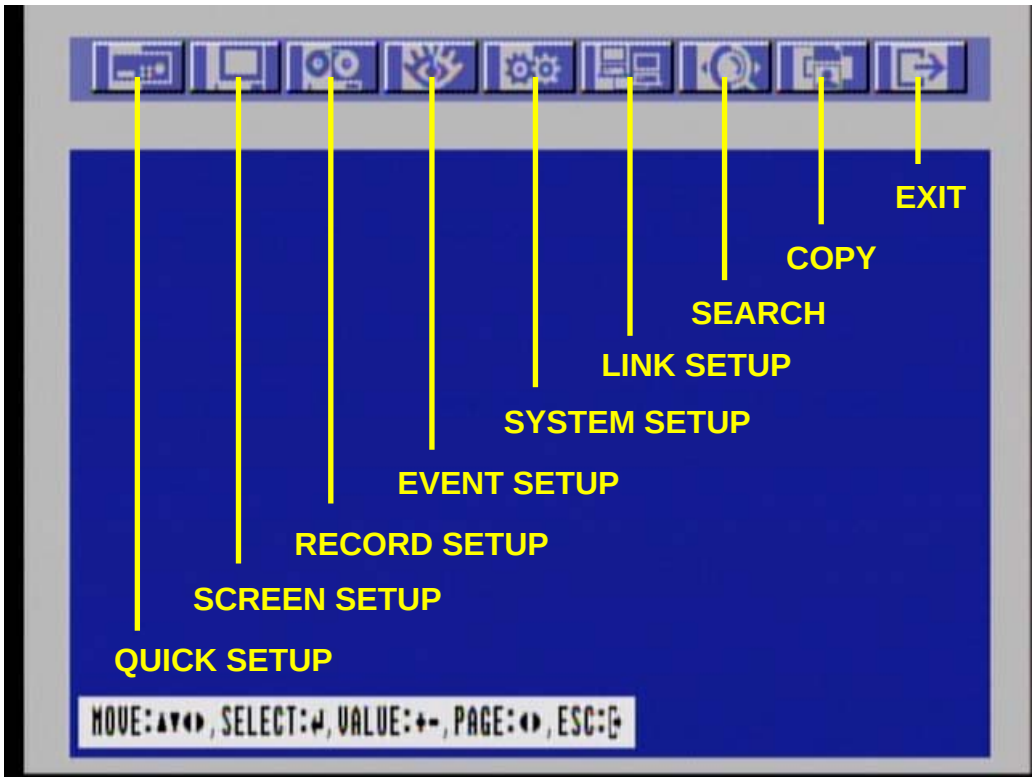
The log file will be saved as “DvrLog.log” file.



Double-click the left mouse button to open and view the log file.

VI. DVR MENU

Press the MENU button to access the main menu of the DVR. The DVR menu consists of the following categories:



6.1 QUICK SETUP

Quick setup enables the user to quickly setup major recording settings of the DVR. All changes made in quick setup are affected equally to all channels. This includes the image size, record speed, image quality, event options, pre and post recording time and audio record settings. Moreover, the activation of quick setup overrides any other recording settings as the quick setup supersedes regular record setup.

6.1.1 QUICK SETUP

Quick setup enables or disables the use of the quick setup settings. The default is OFF.

6.1.2 IMAGE SIZE

Image size determines the recording picture size. Available sizes are:

- CIF: 360 X 240
- Half D1: 720 X 240
- D1: 720 X 480

The default size is Half D1.

6.1.3 RECORD FRAME

Record frame determines the overall recording speed of the DVR. The recording speed adjusts automatically according to the image size and divided equally between all available channels. As an example, the 120 available recording speed is divided equally between 16 channels on the 16 Channel DVR.

The default is 120 IPS.

The following chart shows the maximum recording speed for each resolution.

Resolution	CIF	Half D1	D1
16 Channel DVR	240	120	60
Recording speed per channel	15	7~8	3~4
8 Channel DVR	240	120	60
Recording speed per channel	30	15	7~8
4 Channel DVR	120	120	60
Recording speed per channel	30	30	15

6.1.4 EVENT

Select the event to be used along with the recording. The default is ALL. Available options are:

- Alarm
- Video Loss
- Motion
- Alarm + Video Loss
- Alarm + Motion
- Video Loss and Motion
- All
- Off

6.1.5 PRE-RECORD TIME

Define the pre-event record time. Select from 0 to 5 seconds. The default is five seconds.

6.1.6 POST-RECORD TIME

Define the post-event recording time. Select from 0 to 60 seconds. The default is ten seconds.

6.1.7 IMAGE QUALITY

Define the recording image quality. Available options are LOW, FINE and SUPERFINE. The default is FINE.

6.1.8 AUDIO RECORD

Select the audio recording on or off for all eight channels. The default is OFF.

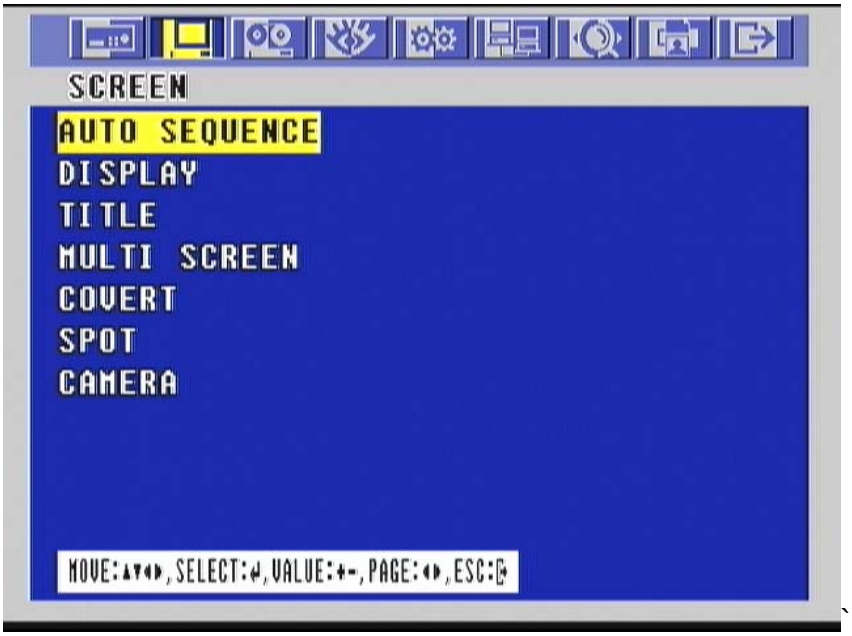
6.1.9 REMOTE CONTROL ID

Select the identification number of the DVR. There are a total of 16 available numbers to choose from. The following numbers may be used:

- 11 through 14
- 21 through 24
- 31 through 34
- 41 through 44
- ALL

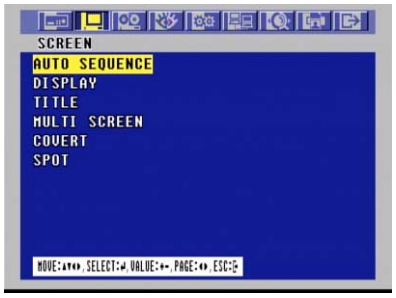
For more information regarding the REMOTE CONTROL ID, please see 6.5.5 REMOTE CONTROLLER ID under SYSTEM menu on page 110. The default is ALL.

6.2 SCREEN SETUP



Screen setup defines various screen related options. Any changes affect the main video as well as the spot monitor output of the DVR.

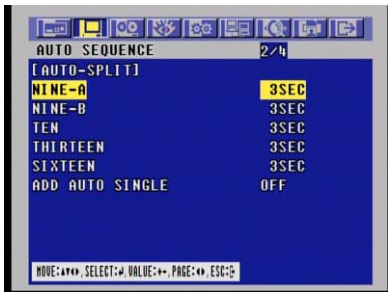
6.2.1 AUTO SEQUENCE



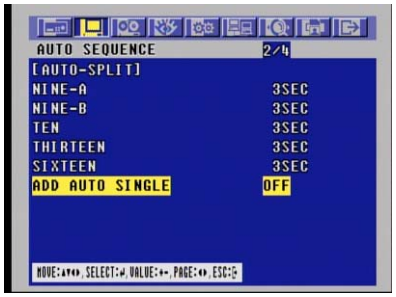
Highlight AUTO SEQUENCE and then press the ENTER button to access four pages of the auto sequence submenu. Navigate between the pages using the left or right directional buttons.

Define the display duration from 0 to 60 seconds. 0 seconds disables the specific display mode's inclusion in the sequence. The default is 3.

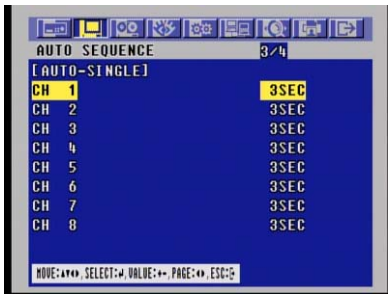
The first page lists the sequence display duration for the quad display mode A through E, six channel display mode and seven channel display mode.



The second page lists the sequence display duration for the nine channel display mode A and B, ten channel display mode, 13 channel display mode, 16 channel display mode, and the option to include single channels.

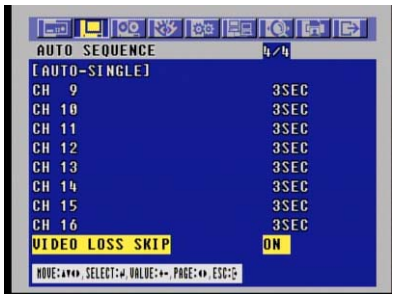


Select the inclusion of single channels in the automatic sequence. The default is off.



The third page lists the sequence display duration for channels 1 through 8.

The fourth page lists the sequence display duration for channels 9 through 16 and the option to skip the channels with video loss.



Select skipping the channels without video input on or off. The default is on.

6.2.2 DISPLAY

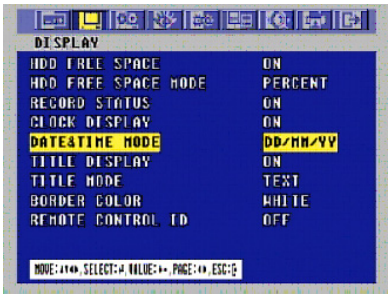
Highlight DISPLAY and then press the ENTER button to access the display submenu.

Select the display option for the remaining space on the hard disk drive. The default is on.

Select the display mode for the remaining free space on the hard disk drive. The default is in percentage.

Select the display option for the recording status. The default is on.

Select the display option for the date and the time. The default is on.



Select the date format. The default is DD/MM/YY.

Select the display option for the channel title. The default is on.

Select the display mode for the channel title. The default is in text mode.

The bitmap mode title can only be edited using the client software.

Select the border color that divides the channels. The default is white.

Select the display option for the remote controller ID. The default is OFF.

6.2.3 TITLE

Highlight TITLE and then press the ENTER button to access the title submenu.

Press the enter button to edit the channel title.

Navigate through the characters by using the directional buttons, and advance through the characters using the + or – buttons. Press the ENTER button to select the characters.

Up to eight characters can be entered for the channel title.

6.2.4 MULTI-SCREEN

Several multi-screen viewing modes can be customized using any combination of cameras. These viewing modes can be disabled and excluded from the view mode sequence. Customizable multi-screens include: MULTI 4E, MULTI 6, MULTI 7, MULTI 9B MULTI 10, AND MULTI 13.

Highlight MULTI-SCREEN and the press the ENTER button to access the multi-screen submenu.

Select a view mode to customize.

The view mode can be disabled to be removed from the sequence of view modes. The default is on.

Highlight the channel to customize, and then press the + or – button to select the desired channel.

6.2.5 COVERT

Highlight COVERT and then press the ENTER button to access the covert channel submenu.

The first page lists the covert mode options for channels 1 through 8. Highlight the desired channel and press the + or – button to activate the covert mode.

The default is off for all channels.

The second page lists the covert mode options for channels 9 through 16. Highlight the desired channel and press the + or – button to activate the covert mode.

Select the covert mode application. By default, the live view, playback and network are affected by the covert mode. Available options are:

- LIVE ONLY
- PLAYBACK ONLY
- NETWORK ONLY
- LIVE AND PLAYBACK
- LIVE AND NETWORK
- PLAYBACK AND NETWORK
- ALL

Select the display of covert on or off.

If activated, then the covert channel will display COVERT.

6.2.6 SPOT

Highlight SPOT and then press the ENTER button to access the spot monitor submenu.

Select the spot monitor display mode:

- Manual
- Event
- Sequenced

The default is manual.

Define the spot monitor sequence mode time from 1 to 60 seconds. The default is 3 seconds.

The channels without video signals can be skipped. Select on or off. The default is on.

6.2.7 CAMERA

Highlight CAMERA and then press the ENTER button to access camera adjustment submenu.

Select the channel which needs to be adjusted.

Adjust the brightness. The default is 50%.

Adjust the contrast. The default is 50%.

Adjust the hue. The default is 50%.

Adjust the saturation of the color. The default is 50%.

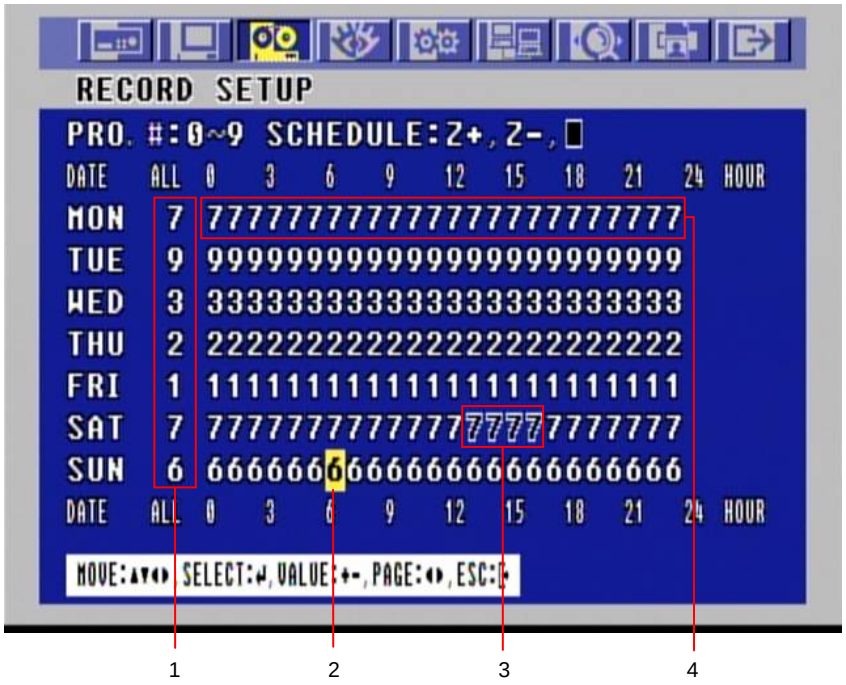
6.3 RECORD

Record setup defines various recording options such as record schedule, record programs, recording time estimate, audio recording, repeat recording, play modes, backup mode, holiday recording schedules and recording period setting.

6.3.1 RECORD SETUP

There are 10 customizable Record Programs arranged in hourly blocks that can be individually scheduled and adjusted. Scheduling allows the DVR to record at specific times even when the REC button is not on.

Highlight RECORD SETUP and press the ENTER button to access the record setup submenu.



1. All

Select the program for the whole day by changing the value in this section.

2. Current hour block

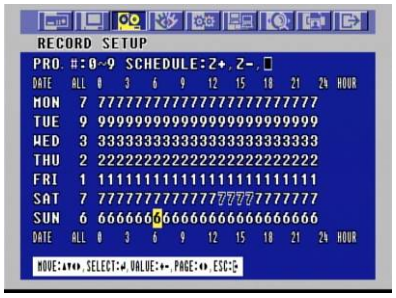
Highlights the current program for the current time.

3. Schedule recording

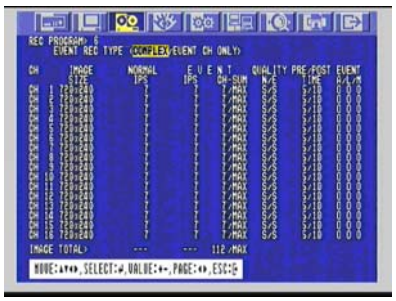
Displays the hour blocks with schedule recording. Schedule recording *forces* the DVR to record even when the REC button is off.

4. Daily overview

Displays the recording program for each hour block of the day. Each hour block can be programmed with different recording programs.



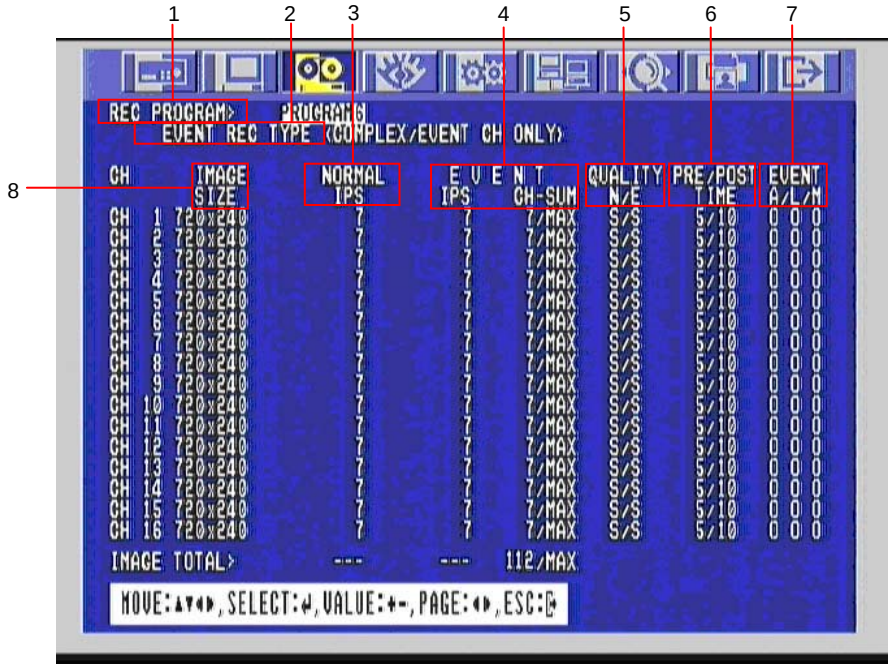
Any of the hour blocks, including “all” block can be further customized by highlighting and pressing the ENTER button.



Any of the record settings can be customized once in the record program mode. Any changes made will be effective only to the hour block.

6.3.2 RECORD PROGRAM

Highlight RECORD PROGRAM and then press the ENTER button to access the record program submenu.



1. RECORD PROGRAM

There are 10 available record programs, from program 0 through program 9, where program 0 reflects the QUICK SETUP settings. Each program can be customized and executed from RECORD SETUP. Please see 4.8 BASIC RECORDING under IV. BASIC OPERATION section on page 41 for the default settings for each program.

2. EVENT RECORD SETTING

The DVR offers two distinctive methods for recording events: SINGLE mode versus COMPLEX mode. Furthermore, both modes offer EVENT Channel ONLY and ALL ChannelS mode for a total of four possible event recording options.

A. Single Mode

Single Mode event recording allows recording a specific channel at up to 30 pictures per second regardless of the image size. When the need arises to record at a higher rate for a specific channel and not be confined to the total available record rate, SINGLE mode allows allocating recording rates to specific channels beyond what would normally be available. 16 Channel DVR and 8 Channel DVR offer a maximum of 240 IPS in CIF resolution, but utilizing Single Mode will allow the DVR to be configured up to 480 IPS.

Please note, however, that the maximum allowed in Single Mode is limited to the sum of normal recording and event recording.

1) Event Channel Only

The event channel records at a predetermined recording speed.

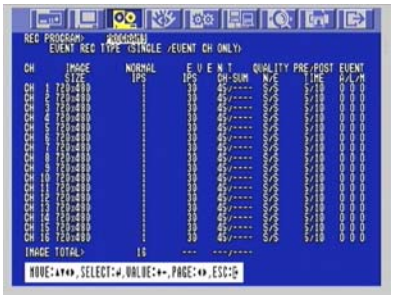
2) All Channels

The event channel records at a predetermined recording speed and triggers the rest of the channels to record with the remaining record rate, divided equally amongst the non-event channel.

NOTE: The changes in Normal Record's IPS will affect the IPS transmitted over the network for the DVR.

Please refer to the following sample scenarios for a better understanding of the SINGLE MODE event recording.

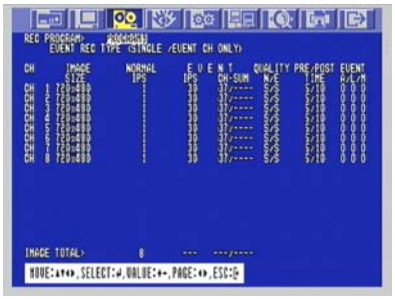
- SCENARIO 1 – Event Channel Only Mode at D1 resolution
<16 Channel DVR>



The owner of a gas station wants to set up the DVR to record at maximum rate on D1 resolution on channels that detect motion. At the same time, the owner would like to record continuously at one picture per second.
Normal record is set to 1 IPS, and the remaining available record rate of 30 IPS is allocated for each channel.

CH-SUM indicates the total of the record rate of the channel that would start recording at 30 IPS plus the sum of the record rate of the remaining channels 15 IPS, hence the total of 45 IPS will be displayed on CH-SUM of each channel.
When the REC button is on, this setup continuously takes one picture per second until a movement is detected, where the record rate will jump to 30 IPS for the channel that triggered the event.
The maximum recording frame rate is 60 IPS in D1 resolution so if you set over 60 IPS on CH-SUM and the following error message, “CHECK CH-SUM” will be displayed when exit the RECORD PROGRAM setting page.

<8 Channel DVR>
The owner of a gas station wants to set up the DVR to record at maximum rate on D1 resolution on channels that detect motion. At the same time, the owner would like to record continuously at one picture per second.


REC PROGRAM:
EVENT REC TYPE <SINGLE /EVENT CH ONLY>
CH IMAGE SIZE NORMAL IPS E V E N T IPS CH-SUM QUALITY N/E PRE/POST TIME EVENT R/L/M
CH 1 720x480 1 30 37/---- S/S 5/10 0 0 0
CH 2 720x480 1 30 37/---- S/S 5/10 0 0 0
CH 3 720x480 1 30 37/---- S/S 5/10 0 0 0
CH 4 720x480 1 30 37/---- S/S 5/10 0 0 0
CH 5 720x480 1 30 37/---- S/S 5/10 0 0 0
CH 6 720x480 1 30 37/---- S/S 5/10 0 0 0
CH 7 720x480 1 30 37/---- S/S 5/10 0 0 0
CH 8 720x480 1 30 37/---- S/S 5/10 0 0 0
IMAGE TOTAL> 8 --- ---/----
MOVE:▲▼◀▶,SELECT:↵,VALUE:+-,PAGE:<>,ESC:

Normal record is set to 1 IPS, and the remaining available record rate of 30 IPS is allocated for each channel.

CH-SUM indicates the total of the record rate of the channel that would start recording at 30 IPS plus the sum of the record rate of the remaining channels 7 IPS, hence the total of 37 IPS will be displayed on CH-SUM of each channel.
When the REC button is on, this setup continuously takes one picture per second until a movement is detected, where the record rate will jump to 30 IPS for the channel that triggered the event.
The maximum recording frame rate is 60 IPS in D1 resolution so if you set over 60 IPS on CH-SUM and the following error message, “CHECK CH-SUM” will be displayed when exit the RECORD PROGRAM setting page.

<4 Channel DVR>
The owner of a gas station wants to set up the DVR to record at maximum rate on D1 resolution on channels that detect motion. At the same time, the owner would like to record continuously at one picture per second.

REC PROGRAM:
EVENT REC TYPE <SINGLE /EVENT CH ONLY>
CH IMAGE SIZE NORMAL IPS E V E N T IPS CH-SUM QUALITY N/E PRE/POST TIME EVENT R/L/M
CH 1 720x480 1 30 33/---- S/S 5/10 0 0 0
CH 2 720x480 1 30 33/---- S/S 5/10 0 0 0
CH 3 720x480 1 30 33/---- S/S 5/10 0 0 0
CH 4 720x480 1 30 33/---- S/S 5/10 0 0 0
IMAGE TOTAL> 4 --- ---/----
MOVE:▲▼◀▶,SELECT:↵,VALUE:+-,PAGE:<>,ESC:

Normal record is set to 1 IPS, and the remaining available record rate of 30 IPS is allocated for each channel.

CH-SUM indicates the total of the record rate of the channel that would start recording at 30 IPS plus the sum of the record rate of the remaining channels 3 IPS, hence the total of 33 IPS will be displayed on CH-SUM of each channel.

When the REC button is on, this setup continuously takes one picture per second until a movement is detected, where the record rate will jump to 30 IPS for the channel that triggered the event.
The maximum recording frame rate is 60 IPS in D1 resolution so if you set over 60 IPS on CH-SUM and the following error message, “CHECK CH-SUM” will be displayed when exit the RECORD PROGRAM setting page.

- SCENARIO 2 – Event Channel Only Mode at Half D1 resolution
<16 Channel DVR>
A convenient store owner wants to record only when there’s an event at Half D1 resolution at 30 IPS only on the channels that trigger alarm events.

Logically, normal record rate is set to 6 IPS per channel, thus allowing the event record to be at 30 IPS but technically the chip for frame rate setting can’t support to be set by 6 IPS so you have to set 5 or 7 IPS.

CH-SUM indicates the total of the record rate of the channel that would start recording at 30 IPS plus the sum of the record rate of remaining channels of 87 or 89 IPS(logically 90 IPS), hence the total of 117 or 119 IPS(logically 120 IPS), the maximum allowed record rate for the Half D1 resolution.

The total of the Single Mode event record rate of 480 IPS exceeds the maximum Half D1 resolution record rate of 120 IPS, but in reality, a total of 120 IPS is used at any given moment.

<8 Channel DVR>
A convenient store owner wants to record only when there’s an event at Half D1 resolution at 30 IPS only on the channels that trigger alarm events.

Logically, normal record rate is set to 12 or13 IPS per channel, thus allowing the event record to be at 30 IPS but technically the chip for frame rate setting can’t support to be set by 12 or 13 IPS so you have to set 10 or 15 IPS.

CH-SUM indicates the total of the record rate of the channel that would start recording at 30 IPS plus the sum of the record rate of remaining channels of 85 or 90 IPS, hence the total of 115 or 120 IPS, the maximum allowed record rate for the Half D1 resolution.

The total of the Single Mode event record rate of 480 IPS exceeds the maximum Half D1 resolution record rate of 120 IPS, but in reality, a total of 120 IPS is used at any given moment.

<4 Channel DVR>
A convenient store owner wants to record only when there's an event at Half D1 resolution at 30 IPS only on the channels that trigger alarm events.

Normal record rate is set to 30 IPS per channel, thus allowing the event record to be at 30 IPS.

CH-SUM indicates the total of the record rate of the channel that would start recording at 30 IPS plus the sum of the record rate of remaining channels of 90 IPS, hence the total of 120 IPS, the maximum allowed record rate for the Half D1 resolution.

-SCENARIO 3 – All Channels Mode at D1 resolution
<16 Channel DVR>
The gas station owner from scenario 1 now wants to record all channels even if one channel is triggered to record. He still wants the triggered channel to record as close to real time as possible, and the rest of the channels to record with the remaining available record rate.

Normal record rate is irrelevant in the calculation of the total record rate as long as it does not exceed 60 IPS, the maximum allowed for D1 resolution. The event IPS is calculated automatically after subtracting IPS for the channel that records on event.

The illustration shows that at any given time, a channel would record at 30 IPS when an alarm circuit is triggered, whereas the rest of the channels will record at 2 IPS ((60 – 30) / 15 = 2 IPS). For example, if channel 3 is triggered to start recording at 30 IPS, channels 1, 2 and 4 through 16 start recording at 2 IPS.

<8 Channel DVR>
The gas station owner from scenario 1 now wants to record all channels even if one channel is triggered to record. He still wants the triggered channel to record as close to real time as possible, and the rest of the channels to record with the remaining available record rate.

Normal record rate is irrelevant in the calculation of the total record rate as long as it does not exceed 60 IPS, the maximum allowed for D1 resolution. The event IPS is calculated

automatically after subtracting IPS for the channel that records on event.

The illustration shows that at any given time, a channel would record at 30 IPS when an alarm circuit is triggered, whereas the rest of the channels will record at 3 or 5 IPS ((60 – 30) / 7 = 3 or 5 IPS). For example, if channel 3 is triggered to start recording at 30 IPS, channels 1, 2 and 4 through 16 start recording at 3 or 5 IPS.

<4 Channel DVR>
The gas station owner from scenario 1 now wants to record all channels even if one channel is triggered to record. He still wants the triggered channel to record as close to real time as possible, and the rest of the channels to record with the remaining available record rate.

Normal record rate is irrelevant in the calculation of the total record rate as long as it does not exceed 60 IPS, the maximum allowed for D1 resolution. The event IPS is calculated automatically after subtracting IPS for the channel that records on event.

The illustration shows that at any given time, a channel would record at 30 IPS when an alarm circuit is triggered, whereas the rest of the channels will record at 10 IPS ((60 – 30) / 3 = 10 IPS). For example, if channel 3 is triggered to start recording at 30 IPS, channels 1, 2 and 4 through 16 start recording at 10 IPS.

B. Complex Mode

Complex Mode event recording records exactly at the predetermined record rate for all channels. The total record rate must be confined within the maximum record rate allowed for the resolution.

1) Event Channel Only
One event channel records at predetermined event recording speed and the other channels records at normal recording speed.

2) All Channels
All channels record at predetermined event recording speed.

3. NORMAL RECORD RATE
Define the manual recording rate. The maximum recording rate per resolution is CIF at 240 ips, Half D1 at 120 ips, D1 at 60 ips in case of 16 Channel DVR/8 Channel DVR and CIF at 120 ips, Half D1 at 120 ips, D1 at 60ips in case of 4 Channel DVR.

4. EVENT RECORD RATE

Event Record Rate configures the recording speed for each channel when for event recording. When an event is triggered, each channel, or all channels will record as defined. Please see 2. EVENT RECORD SETTING on page 91.

5. RECORD QUALITY
Select the record quality for normal recording and event recording. Available options are Low, Fine and Superfine.

6. PRE / POST EVENT RECORD TIME
Select the pre and post event record time. 0 to 5 seconds for pre record time and 0 to 60 for post record time.

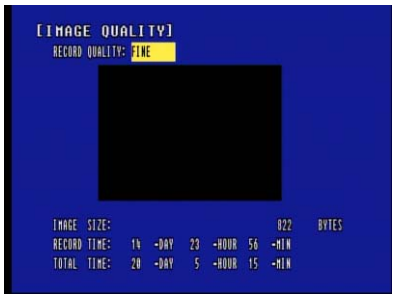
7. EVENT OPTION
Select event option for each channel. 0 for on and – for off.

8. IMAGE SIZE
The DVR is capable of recording in three different resolutions: CIF (360 x 240), Half D1 (720 x 240) and D1 (720 x 480).

6.3.3 IMAGE QUALITY

Image quality predicts how much time the DVR will record based on the record settings.

Highlight IMAGE QUALITY and then press the ENTER button to access the image quality screen.



Select the image quality by pressing the + or – button. The FILE SIZE, RECORD TIME and TOTAL TIME will adjust automatically based on the picture quality and the content of the camera.

Please verify that the REC button is off.

6.3.4 AUDIO RECORD

Highlight AUDIO RECORD and then press the ENTER button to access the audio record submenu.

Enable or disable the audio recording option for each channel.

The default is off.

6.3.5 REPEAT RECORD

Highlight REPEAT RECORD and then press the ENTER button to access the repeat record submenu.

Select the repeat recording option on or off.

The default is on.

Select the threshold at which the alarm will sound. Select from 5% to 10%, or off.

The default is 5%.

6.3.6 PLAY MODE

Select the playback mode for the recorded data. Available options are:

- FRAME: for higher frame rate
- FIELD: for lower frame rate

As the general rule of thumb, FRAME mode is recommended for playing back recording rates of 10 pictures per second or higher, and FIELD mode is recommended for recording rates of 10 pictures per second or lower. FRAME mode greatly improves the playback quality of fast moving objects, such as PTZ cameras, or cars passing by, whereas FIELD mode greatly improves the playback picture quality even at one picture per second. The default is FRAME.

6.3.7 BACKUP MODE

Select the recording mode for the backup hard disk drives. Available options are:

- MIRROR: create a real-time duplicate copy of the normal recording hard disk drives.
- EVENT: create a backup hard disk drive of event recordings only.

The default is off.

6.3.8 HOLIDAY

Highlight HOLIDAY and then press the ENTER button to access the holiday schedule screen.

Select the holiday recording option on or off.

The default is off.

Define the holidays in MM/DD format. Adjust the values using the + or – buttons.

6.3.9 RECORD LIMIT

Select the recording mode to limit the recording period.
If you select 1 month, DVR will delete the saved data per 1 month.

The default is off.

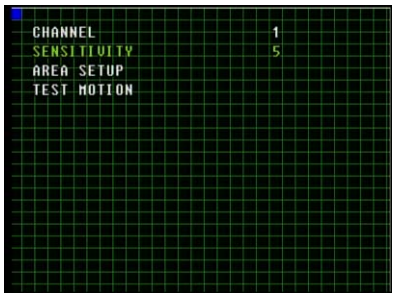
6.4 EVENT

Event setup defines various event options such as the motion grid and the motion detection sensitivity, the main screen event response option, buzzer option, sensor input and relay output options.

6.4.1 MOTION DETECTION

Highlight MOTION DETECTION and then press the ENTER button to access the motion detection submenu.

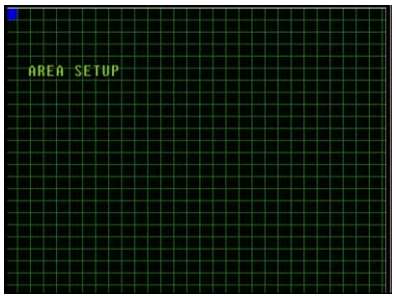
Select the channel to customize motion related options by pressing the + or – buttons.



Adjust the sensitivity of the motion detection from 1 to 5 by pressing the + or – buttons.

The default is 5.

Highlight AREA SETUP and then press the ENTER button to access the motion grid setup screen.

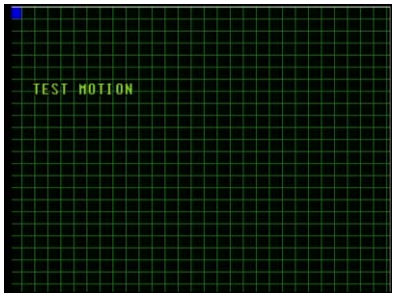


Move the blue cursor around using the directional buttons, and then press the ENTER button to disable each grid. Press the ESC button to return to motion menu.

- Green tint: motion detection on
- No tint: motion detection off

The default is on for all grids.

Highlight TEST MOTION and then press the ENTER button to access motion testing screen.



Any grid that detects motion will flash a purple tint for the period of time that it detects motion.

6.4.2 EVENT SCREEN MODE

Define how the main video output reacts when an event occurs.

- SCREEN HOLD: maintains the current view mode.
- EVENT FULL: the channel in which the event occurs is displayed in full screen.
- EVENT MULTI: regardless of which channel the event occurs in, the view mode is changed into multiple channel view mode.
- EVENT F_RTN: when an event occurs, the view mode is changed to that of the channel with the event, and then returns to the previous view mode.
- EVENT M_RTN: when an event occurs, the view mode is changed to multi-channel view mode, and then returns to the previous view mode.

The default mode is SCREEN HOLD.

6.4.3 EVENT CHECK

Select the EVENT CHECK option on or off. If the event check is set to off, then none of the event recording options will trigger.

The default is off.

6.4.4 EVENT MESSAGE

Select the EVENT MESSAGE display option on or off.

The default is off.

6.4.5 EVENT MESSAGE RESET

Select the duration of the event message to be displayed from 1 to 30 seconds.

The default is 5 seconds.

6.4.6 EVENT BUZZER

.Select the buzzer option on or off.

The default is off.

6.4.7 SENSOR INPUT

Highlight SENSOR INPUT and then press the ENTER button to access the sensor input submenu.

Select the sensor input type, or the type of the circuit to be used with each channel. Available options are, normally closed (NC), normally open (NO) and not used.

The default is NOT USED.

6.4.8 RELAY OUTPUT

Highlight RELAY OUTPUT and then press the ENTER button to access the relay output submenu.

The first page lists relay output options for channels 1 through 8. For each channel, it is possible to customize relay 1 through 3 for each of the event options. To change the relay output for each event, highlight the relay output and then press + or – buttons to change to the desired output number.

The second page lists relay output options for channels 9 through 16.

The third page lists the relay output time for relay outputs 1 through 3. Select the relay output time from 1 to 30 seconds. The default time is 1 second.

The fourth relay can be customized to be used with the following options:

- POWER LOSS: relay triggered when the DVR loses power
- HDD ERROR: relay triggered when the hard disk drive fails
- USER: manual relay operation
- NOT USED

6.5 SYSTEM

System setup defines various system settings such as hard disk drive settings, system clock, password for multiple users, video standard, language, remote controller, and the key echo. Moreover the system settings can be reinitialized, saved or retrieved from the USB flash memory, as well as updating the DVR firmware.

6.5.1 HARD DISK DRIVE

Highlight HDD and then press the ENTER button to access the hard disk drive management submenu.

6.5.1.1 HDD configuration

Highlight the HDD CONFIGURATION and then press the ENTER button to access HDD configuration submenu.

The DVR detects installed hard disk drives automatically. Any hard disk drive can be defined to be a normal recording drive (REC drive) or a backup drive (BACKUP). Highlight a desired drive and then select the function for the hard disk drive by pressing the + or – button.

Highlight EXTERNAL, and then press the ENTER button to access the list of hard disk drives in the expansion bay, XHD-10U.

The hard disk drives will be automatically detected just as in the main DVR HDD bays. If any hard disk drives are installed, then highlight the desired hard disk drive and then select the function by pressing the + or – button. All hard drives in the expansion bays are set to REC by default.

6.5.1.2 Rec HDD initialize

The hard disk drives set for normal recording can be initialized at any time by accessing this menu. Highlight REC HDD INITIALIZE and then press the ENTER button to access the initialization screen.

Select YES and then press the ENTER button to initialize the hard disk drives. Initialization is instantaneous. Select NO to return to the previous menu screen.

6.5.1.3 Backup HDD initialize

The backup hard disk drives can be initialized at any time by accessing this menu. Highlight BACKUP HDD INITIALIZE and then press the ENTER button to access the initialization screen.

Select YES and then press the ENTER button to initialize the hard disk drives. Initialization is instantaneous. Select NO to return to the previous menu screen.

6.5.2 CLOCK

Highlight CLOCK and then press the ENTER button to access the system clock submenu.

6.5.2.1 Date & Time

Highlight DATE & TIME and then press the ENTER button to adjust the system date and time.

Advance through the year, month, date and time by using the directional buttons, and use the + or – button to adjust the values.
Once the value has been adjusted, press the ENTER button to make the new date and time effective.

Press ESC to return to the previous menu.

6.5.2.2 Time Adjust

Highlight TIME ADJUST and then press the ENTER button to access time adjust submenu.

Select automatic time adjustment through internet time server on or off. The default is off.

Highlight SELECT TIME SERVER and then press the ENTER button to add an internet time server.

Enter the IP address of the time server.

Some of the most of common time servers are:

- 207.46.232.189 (time.windows.com)
- 192.43.244.18 (time.nist.gov)

Press ESC to return to previous menu.

Select the time zone for the local time.

For the list of the time zone for your local area, please see Appendix I on page **Error! Bookmark not defined.**.

Select the DAYLIGHT SAVINGS TIME option on or off. The default is off.

Define the daylight savings time starting month, week, day and time.

Define the daylight savings time ending month, week, day and time.

6.5.3 VIDEO STANDARD

Select the video standard by pressing the + or – buttons. Available standards are NTSC, PAL, and AUTO. When set to AUTO, the DVR automatically detects the video signal and display the main video output accordingly.

The default is AUTO.

6.5.4 LANGUAGE

Select from seven available language settings:

- English
- Korean
- Japanese
- Polish
- Spanish
- Russian
- Chinese
- Taiwanese
- French
- Turkish
- German
- Italian
- Portuguese

6.5.5 REMOTE CONTROL ID

If there is more than one DVR present at the same location and each DVR needs to be controlled separately using a remote controller, then each DVR can be addressed differently so that all of them can be controlled using one remote controller.

Highlight REMOTE CONTROL ID and then press the + or – button to define the remote controller ID for the DVR. Available options are:

- 11 through 14
- 21 through 24
- 31 through 34
- 41 through 44
- ALL

6.5.6 KEY ECHO

Key echo is the audible tone heard when pressing and key. Highlight and select KEY ECHO option on or off by pressing the + or – buttons.

The default is on.

6.5.7 ADVANCED SETUP

The DVR's passwords and different access levels can be configured from the Advanced Menu, as well as saving and retrieving the DVR menu settings.

6.5.7.1 Password Check

Select password check option on or off. When enabled, it will prompt for password on the following functions unless disabled individually under user settings:

- REC button
- Search & Play buttons
- Copy button
- Live Audio selection
- Main Menu button
- Status button
- PTZ control button

The password is in effect for one minute after it's been entered to gain access to any of the functions. For example, once the password is entered to gain the main menu screen, it will not have to be re-entered to gain access to any other screens that require passwords.

6.5.7.2 Set Password

Highlight SET PASSWORD and then press the ENTER button to access the password submenu.

Select a desired user to modify the password, and then press the ENTER button. The default passwords are as follows:

Admin: 11111111
User 1: 22222222
User 2: 33333333
User 3: 44444444
User 4: 55555555

Enter eight numbers for the new password, and then re-enter the same password under RE-TYPE section. The asterisks will advance automatically as the numbers are entered.

6.5.7.3 User Authority

Highlight USER AUTHORITY and then press the ENTER button to access user authority screen.

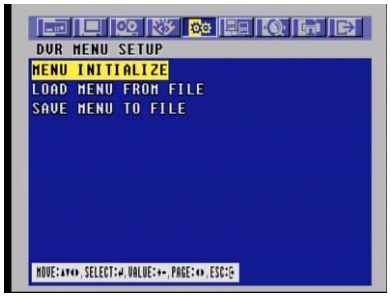
USER AUTHORITY
AUTHORITY U1 U2 U3 U4
REC OFF OFF OFF OFF
SEARCH&PLAY OFF OFF OFF OFF
COPY OFF OFF OFF OFF
LIVE AUDIO OFF OFF OFF OFF
DVR SETUP OFF OFF OFF OFF
DVR STATUS OFF OFF OFF OFF
PTZ CONTROL OFF OFF OFF OFF

Highlight and modify each user's level of authority by pressing the + or – buttons.

6.5.7.4 DVR Menu Setup

DVR's menu settings and preferences can be saved or retrieved from the USB flash memory, as well as resetting all settings back to factory default.

6.5.7.4.1 Menu Initialize



Highlight MENU INITIALIZE and then press the ENTER button to reset all menu settings back to factory default.

Select YES and then press the ENTER button to reset back to factory default. Select NO to exit without resetting.

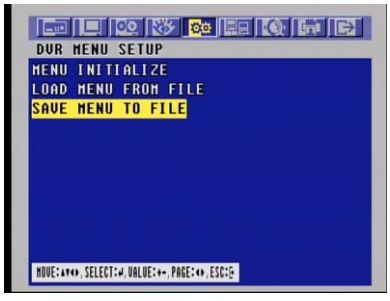
6.5.7.4.2 Load menu from file

Highlight LOAD MENU FROM FILE and then press the ENTER button to load a DVR setting from the USB flash memory. The USB flash memory with the DVR menu file *must* be inserted into the front USB port.

The DVR will attempt to read from the USB flash memory.

When a menu file is found, it will load to the DVR, and when successful, it will display “LOAD MENU SUCCESSFUL”.

6.5.7.4.3 Save menu to file



Highlight SAVE MENU TO FILE and then press the ENTER button to save the menu settings onto a USB flash memory. The USB flash memory *must* be inserted into the front USB port.

When saving the DVR menu settings is successful, the DVR will display “ENV COPY SUCCESS”.

6.5.9 FIRMWARE UPGRADE

The DVR’s software can be upgraded for the latest feature updates, fixes and improvements via the USB flash memory.

Highlight FIRMWARE UPGRADE and then press the ENTER button to access the firmware upgrade screen.

Select YES and then press the ENTER button to begin the firmware upgrade. The USB flash memory with the upgrade file *must* be inserted into the front USB port.

The DVR will start reading the available upgrade file.

Once the file is found, it will check for the integrity of the file.

If the integrity of the file is intact, then it will start the upgrade process.

The upgrade progress will be shown in percentages. The whole process should take approximately two minutes.

Do not remove the USB flash memory from the USB port during the upgrade.

When the upgrade is finished, the DVR will display “COMPLETED! RESTART DVR”. Power off and power on the DVR to apply the upgrade.

6.6 LINK

Link setup defines various settings between the DVR and various devices such as internet connection, keyboard controllers, PTZ cameras, e-mails, DVR name/location setting in order to search the DVR in CMS(Central Monitoring System) and CCC server.

6.6.1 NETWORK

Highlight NETWORK and then press the ENTER button to access the network setup submenu.

Select DHCP option on or off. DHCP (Dynamic Host Configuration Protocol) is another word for Dynamic IP. If enabled, the DVR will obtain an IP address automatically from a router or from the Internet Service Provider.

Define the IP address if the DHCP is set to off. The DVR should be provided with its own static IP address.

Define the subnet mask. The subnet mask should also be provided along with the IP address.

Define the gateway. The gateway should also be provided along with the IP address and the subnet mask.

Define the DNS (Domain Name Server). If the internet time server and/or the SMTP e-mail server are to be setup using alphabet rather than numbers, then the DNS must be defined in order for the DVR to locate the servers. The DNS is usually provided from the Internet Service Provider.

Define the port that the DVR will communicate through. Available ports are 5400 through 5499.

The default port is 5400.

Define the primary dynamic IP server's address if a proprietary server is to be setup and used in conjunction with the DVR.

Vitek provides a dynamic IP server to find the DVR even if it is connected on a dynamic IP service.

Define the secondary dynamic IP server's address if a proprietary server is to be setup and used in conjunction with the DVR.

Select the network transmission method.

- STILL: send still pictures.
- MOTION: send conditionally refreshed pictures.

The default is STILL.

6.6.2 RS-232C

The RS-232C port can be used with a variety of add-on devices, such as the Point of Sales (POS) boxes and third party controllers if they need to be connected through the RS-232C port.

Highlight RS232C and then press the ENTER button to access the serial port submenu.

Select the communication speed. Available speeds are from 1200 to 115200.

The default speed is 115200.

Select the data bit. Available options are 6 to 8.

The default bit is 8.

Select the parity bit. Available options are ODD, EVEN and NONE.

The default is NONE.

Select the stop bit. Available options are 1 and 2.

The default is 1.

6.6.3 RS-485

Highlight RS485 and then press the ENTER button to access the RS-485 submenu.

Select the DVR's system ID between 0 to 255. The system ID should be issued when controlling multiple DVRs with a keyboard controller. The address should also be issued when controlling PTZ cameras from the DVR.
The default ID is 1.

Select the communication speed. Available speeds are from 1200 to 115200.
The default speed is 115200.

Select the data bit. Available options are 6 to 8.

The default bit is 8.

Select the parity bit. Available options are ODD, EVEN and NONE.

The default is NONE.

Select the stop bit. Available options are 1 and 2.

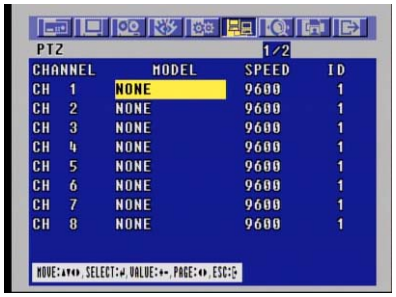
The default is 1.

6.6.4 PTZ

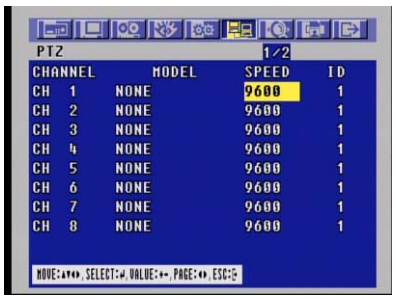
The DVR can control as many Pan / Tilt / Zoom cameras as many as the number of channels it records on. As there are multiple vendors of PTZ cameras, the DVR also supports a variety of protocols. The following is the list of supported manufacturers and their models:

Manufacturer	Model
Samsung Techwin	SPD
Samsung Techwin	SRX-100B
Canon	VC-C4R
Smile Cam	SD-290
Samsung Electronics	SCC-643
Pelco	Pelco D
Pelco	Pelco P
Dongyang Unitech	DSC-230S
Panasonic	WV-CS854A
Daiwa	DMP23
LG Electronics	LPT-A100L
Bosch	TC8560/TC700
Vitek	EZ (Xpress Dome)
JVC	TK-C655/C676
Sunkwang	SK-D106

Highlight PTZ and then press the ENTER button to access PTZ camera submenu.

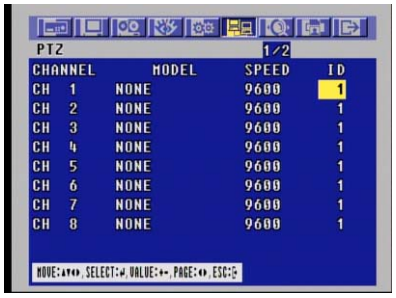

PTZ
1/2
CHANNEL MODEL SPEED ID
CH 1 NONE 9600 1
CH 2 NONE 9600 1
CH 3 NONE 9600 1
CH 4 NONE 9600 1
CH 5 NONE 9600 1
CH 6 NONE 9600 1
CH 7 NONE 9600 1
CH 8 NONE 9600 1

Highlight the desired channel number where the PTZ camera is connected, then scroll through the list of PTZ cameras and select the appropriate protocol.


PTZ 1/2
CHANNEL MODEL SPEED ID
CH 1 NONE 9600 1
CH 2 NONE 9600 1
CH 3 NONE 9600 1
CH 4 NONE 9600 1
CH 5 NONE 9600 1
CH 6 NONE 9600 1
CH 7 NONE 9600 1
CH 8 NONE 9600 1

Select the communication speed. Available speeds are from 1200 to 115200.

The default is 9600.


PTZ 1/2
CHANNEL MODEL SPEED ID
CH 1 NONE 9600 1
CH 2 NONE 9600 1
CH 3 NONE 9600 1
CH 4 NONE 9600 1
CH 5 NONE 9600 1
CH 6 NONE 9600 1
CH 7 NONE 9600 1
CH 8 NONE 9600 1

Select and match the PTZ camera address. For example, if the PTZ camera is set to address 2, then the ID should be set to 2.

6.6.5 E-MAIL

The DVR is capable of sending e-mails when an event occurs to up to ten different e-mail addresses.

Highlight E-MAIL and then press the ENTER button to access the e-mail submenu.

The first page consists of e-mail notification option, e-mail server setup, DVR's e-mail address, DVR's user name and password to access the mail server. The second and third pages consist of e-mail address 1 through 5 and 6 through 10, respectively.

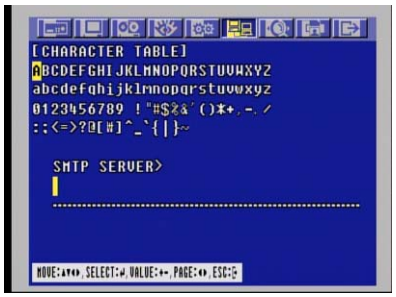
6.6.5.1 Send e-mail

Select the e-mail notification on or off.

The default is off.

6.6.5.2 SMTP server

Highlight SMTP SERVER and then press the ENTER button to define an e-mail server.



Enter the e-mail server's address.

For example:
mail.domainname.com

Press the ESC button to return to previous menu.

6.6.5.3 DVR e-mail address

Highlight DVR E-MAIL ADDRESS and then press the ENTER button to define the DVR's e-mail address.

Enter the DVR's e-mail address as assigned by the network administrator, or create one that conforms with the specification of the Internet Service Provider.

Press the ESC button to return to previous menu.

6.6.5.4 User ID

Highlight USER ID and then press the ENTER button to define the user ID for the DVR's e-mail account.

Enter the user name to log into the DVR's e-mail account.

Press the ESC button to return to previous menu.

6.6.5.5 Password

Highlight PASSWORD and then press the ENTER button to define the password for the DVR's e-mail address.

Enter the password to log into the DVR's e-mail account.

Press the ESC button to return to previous menu.

6.6.5.6 E-mail address 1 through 10

Highlight a desired e-mail address to send the notifications to, and then press the ENTER button to define the e-mail address.

Enter the e-mail address.

Press the ESC button to return to the previous menu.

6.6.6 DVR NAME

The DVR can support CMS(Central Monitoring System). You should set the DVR name to search the DVR in CMS.

Highlight DVR NAME and then press the ENTER button to define the DVR name.

Set the DVR name selecting the characters.

Press the ESC button to return to previous menu.

6.6.7 DVR LOCATION

The DVR can support CMS(Central Monitoring System). You should set the DVR location to search the DVR in CMS.

Highlight DVR LOCATION and then press the ENTER button to define the DVR location.

Set the DVR location selecting the characters.

Press the ESC button to return to previous menu.

6.6.8 CCC SERVER

For sending the information to CCC server and it's only for a user to use CCC server.

VII. SEARCH

Please see 5.4 ADVANCED PLAYBACK under section V. ADVANCED OPERATION on page 59.

VIII. COPY

Please see 5.1 BACKUP under section V. ADVANCED OPERATION on page 47.

IX. EXIT

Any and all settings must be saved in order to be put into effect. After any setting has been modified, the ESC button can be pressed several times until the EXIT screen is shown.

9.1 SAVE ONLY

SAVE ONLY will be automatically highlighted when the ESC button is pressed. Press the ENTER button to save the settings and to return to any other menus for further modifications.

9.2 SAVE AND EXIT

Highlight and press the ENTER button to save any changes and exit to the live screen view mode.

9.3 EXIT WITHOUT SAVE

Highlight and press the ENTER button to disregard any changes and exit to the live screen view mode.

X. CLIENT PROGRAM: DVR VIEWER

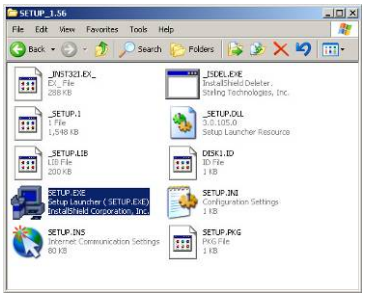
The DVR Viewer is a dedicated client program that connects to, monitors and manages up to 16 DVRs simultaneously.

10.1 SYSTEM REQUIREMENT

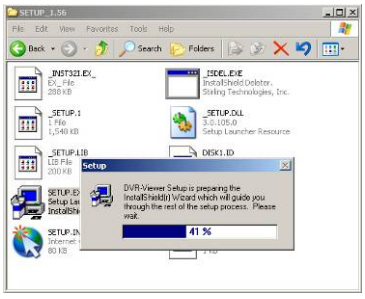
The DVR Viewer receives, decodes and displays data for up to 16 DVRs or up to 256 cameras simultaneously requiring a powerful personal computer to take full advantage of the program. The following is the minimum and recommended PC specification.

	Minimum	Recommended
OS	Windows 2000	Windows XP
CPU	Pentium III 1 Ghz	Pentium IV 2.8 Ghz
RAM	128MB	512MB
Video Card	16MB	128MB
Free Space	50MB	2GB
Resolution	800x600x16	1024x768x32
DirectX	DirectX 7.0	DirectX 9.0c
Network	Ethernet 10/100B-TX	Ethernet 10/100B-TX
Port	Port 5400 ~ 5499 TCP	Port 5400 ~ 5499 TCP

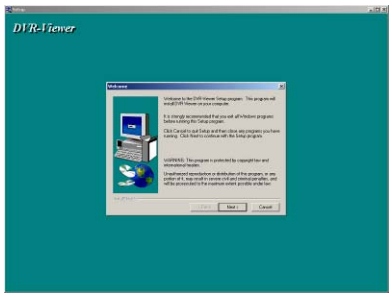
10.2 INSTALLING THE DVR VIEWER



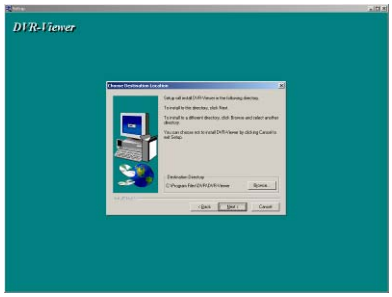
Insert the program CD into the CD-ROM or DVD-ROM drive of the computer and locate the SETUP.EXE file.



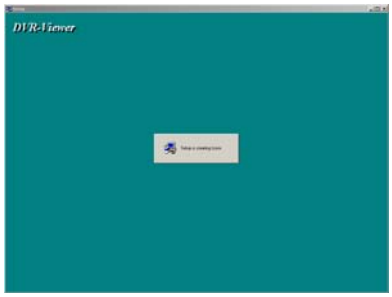
Double-click on the setup file, and the program will start the installation.



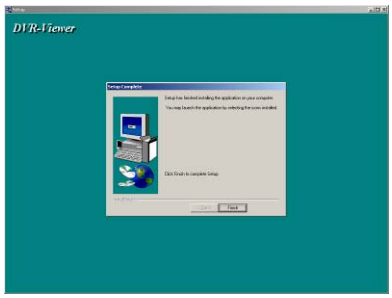
Click on NEXT.



The DVR viewer will be installed in its default folder of C:\Program Files\DVR\DVR-Viewer. If the folder needs to be changed, click on “BROWSE…” button and then select a different folder.



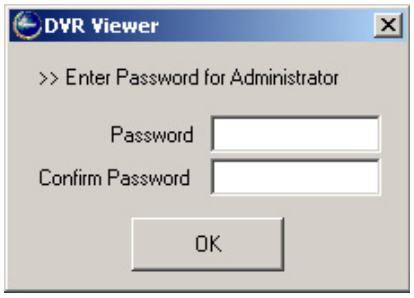
The setup program will run through its series of installation process.



Click on FINISH to complete the installation.

10.3 DVR VIEWER - LAYOUT

Locate the DvrViewer icon on the desktop and double-click on it to run the client software. The program can also be located in START- Programs – DVR-Viewer.



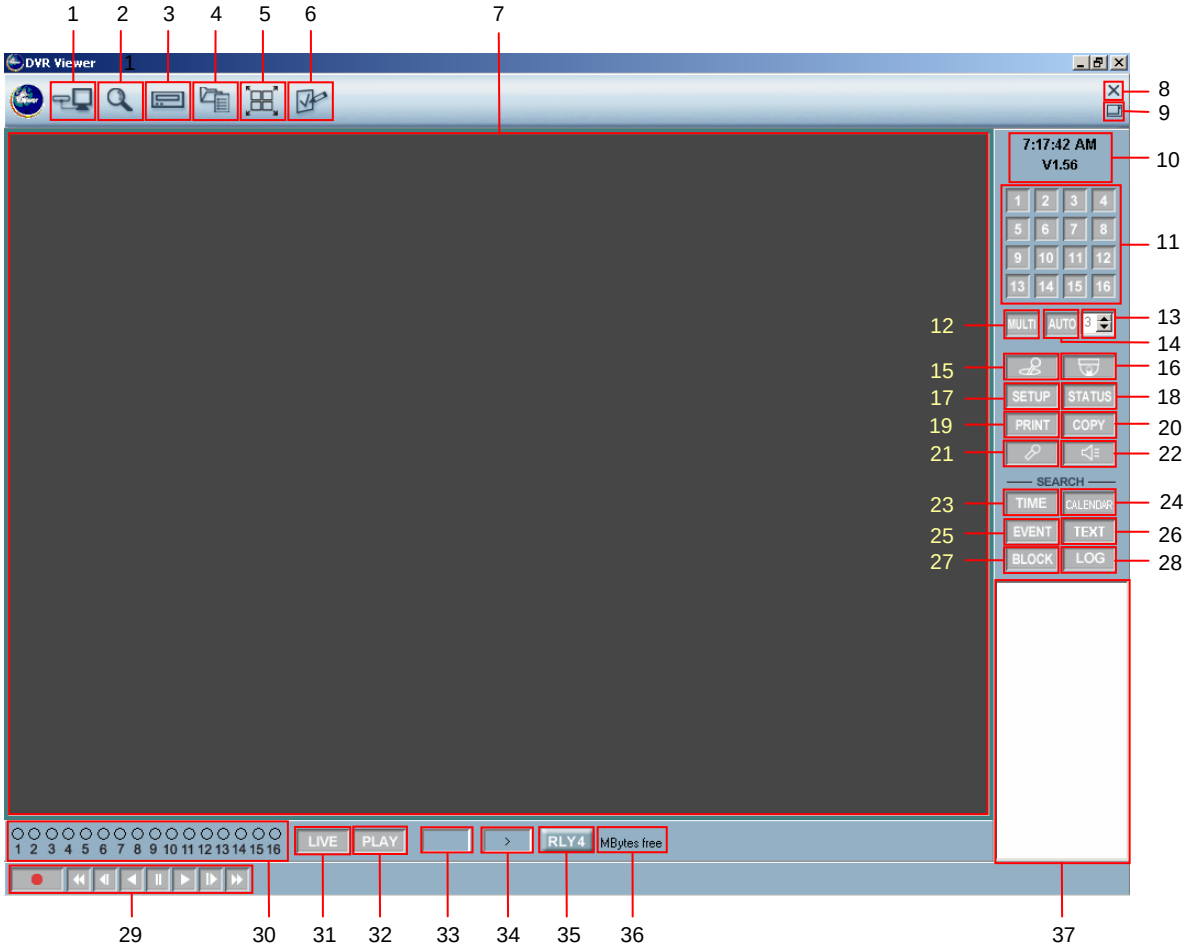
When the DVR Viewer is run for the first time, the password input window displays like the left picture.

Select and enter a password of up to 20 alphanumeric characters. It's possible to enter without character.

Click on OK to start the program.

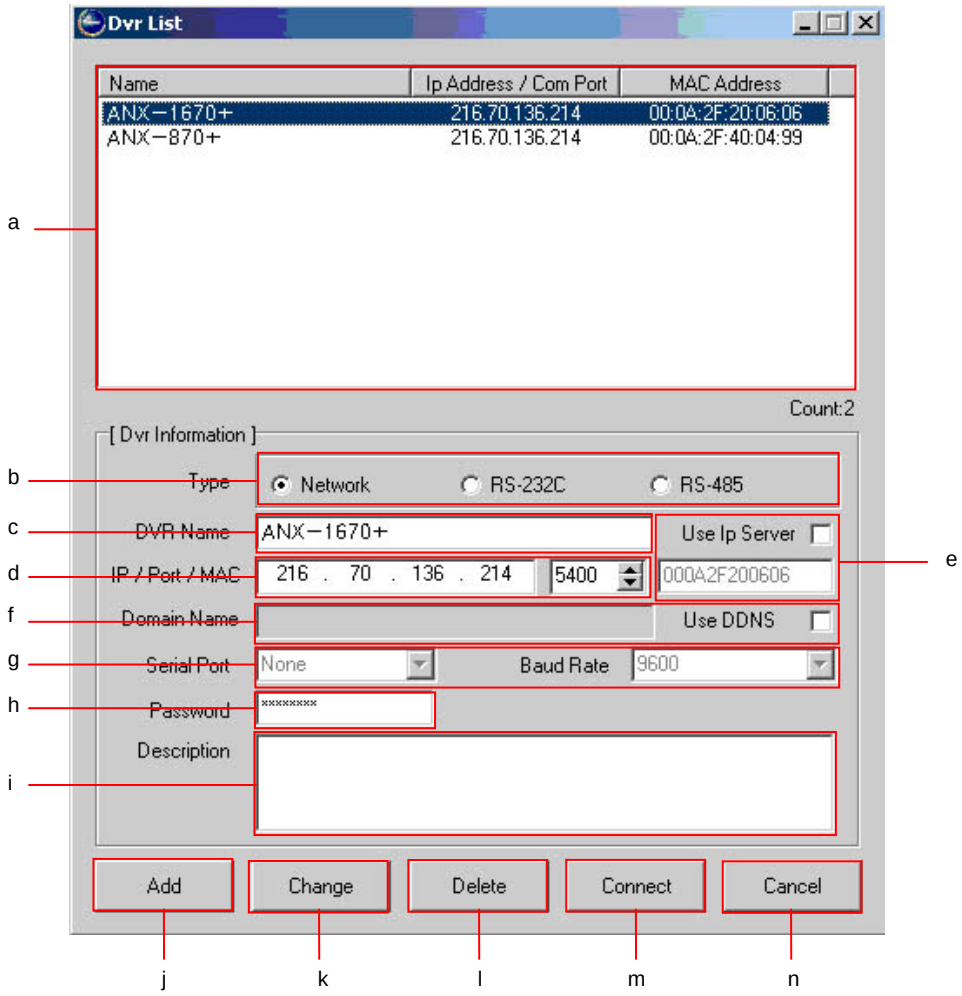
NOTE: You have to input the setting password whenever run the DVR Viewer so please note it not to forget.

The DVR Viewer has two display modes. When the program is run for the first time, it will be shown in the attached mode. The DVR Viewer then can be switched into detached mode to view up to 16 DVR windows simultaneously.



1. DVR LIST

The DVR List adds or removes individual DVRs and offers a variety of connection options.



a. DVR List

The DVRs that have been added are listed in this box.

b. Connection Type

Select the connection type to the DVR.

c. DVR Name

Enter the DVR name.

d. IP Address and Port

Enter the IP address and the port number for the DVR, if known.

e. Use IP Server
The DVR can be located on the internet using the MAC address displayed in the status screen. If the MAC address is to be used, “Use IP Server” box must be checked.

f. Domain Name / Use DDNS
The DVR can be located on the internet using a domain name, or a web address. The DVR must be registered with a Dynamic DNS service in order to be located. If the Domain Name is to be used, “Use DDNS” box must be checked.

g. Serial Port
Select the COM port and the baud rate if RS-232C or RS-485 protocols are used to connect to the DVR.

h. Password
Enter the password to access the DVR remotely. The password level entered will grant the access privileges assigned by the administrator.

i. Description
Add comments or notes to the DVR in this box.

j. Add
Once all the information for the DVR has been entered, click on ADD to add to the DVR list.

k. Change
After changing the DVR information, click on CHANGE to update the DVR information.

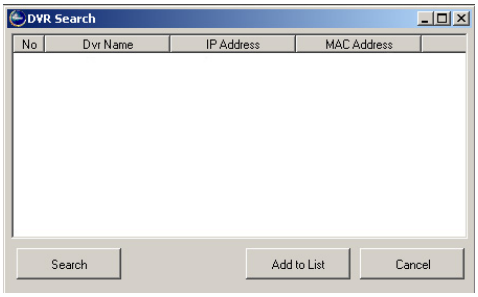
l. Delete
Highlight a DVR from the DVR List and then click on DELETE to remove from the DVR List.

m. Connect
Highlight a DVR from the DVR List and then click on CONNECT to remotely connect to the DVR.

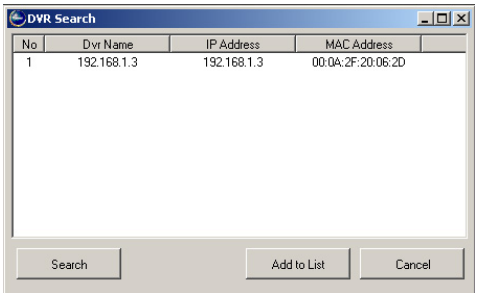
n. Cancel
Click on CANCEL to exit from the DVR List menu.

2. DVR SEARCH

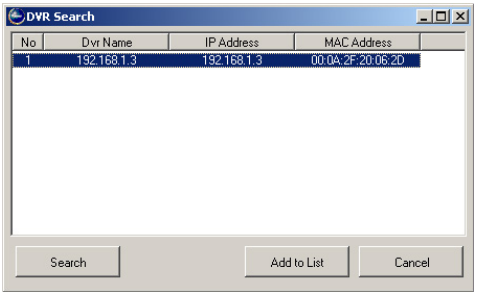
Within a local area network environment (LAN), it is possible to automatically scan and list available DVRs to be added to the DVR list.



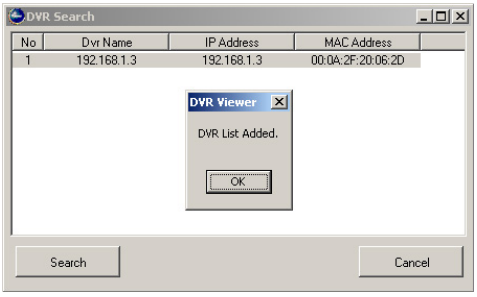
Click on DVR SEARCH to open the DVR Search window.



Click on SEARCH, and available DVRs will be listed.



Highlight a desired DVR to add to the DVR List, and then click on ADD TO LIST.

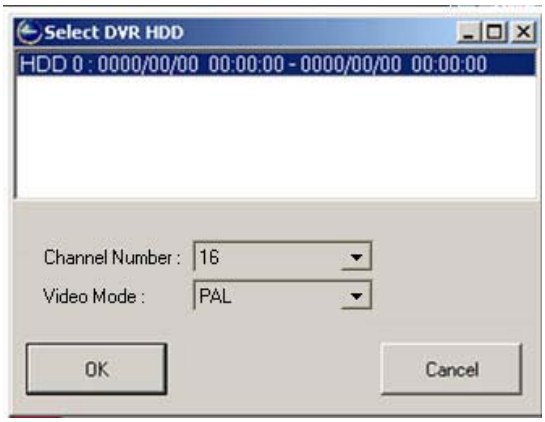


"DVR List Added." Message will appear with a successful addition to the DVR list.

Click on CANCEL to exit from DVR Search.

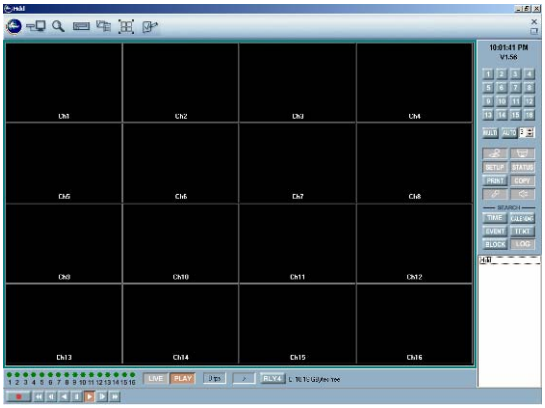
3. HDD SEARCH

The hard disk drive from the DVR can be directly connected to a PC, where the files can be searched and played back through the DVR Viewer.



Click on HDD SEARCH to open the HDD Search window

Select a hard disk drive after selecting the desired Channel Number and the Video Mode, and then click on OK.

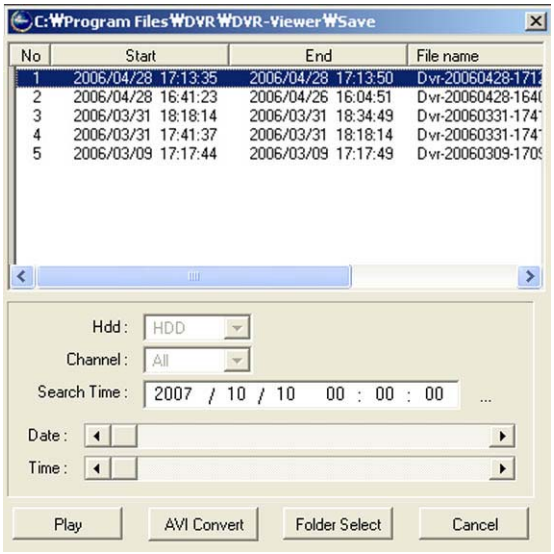


Recorded channels will be shown in the main channel display window.

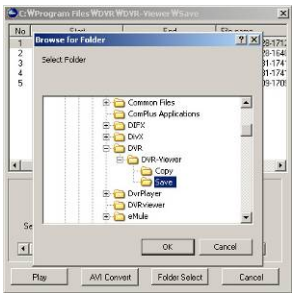
The content of the hard drive can be further searched and played back using any one of the search features, or using the playback buttons to playback in slow, fast, or paused mode.

4. FILE SEARCH

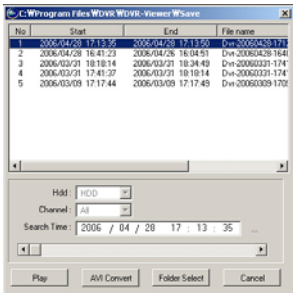
Backed up files and files that have been downloaded can be searched and played back.



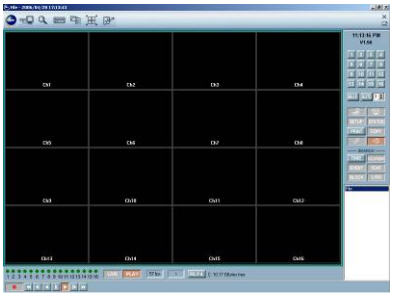
Click on FILE SEARCH to open the File Search window.



If the desired file is not listed in the current folder, then select the folder in which the files are saved by clicking on FOLDER SELECT.



Select a file to view, and then click on PLAY to begin the playback. The file can also be played back by double-clicking on it.



Once the playback starts, it can be slowed, paused and fast forwarded using the playback buttons.

The playback list can be viewed and selected again from the TIME search button once the playback starts.

5. ARRANGE WINDOW

Arrange window button works only in detached window mode (See #9). When viewing multiple DVRs, clicking on ARRANGE WINDOW sort and display all DVR connection windows in a tile format.

SINGLE DVR

1 ~ 4 DVRS

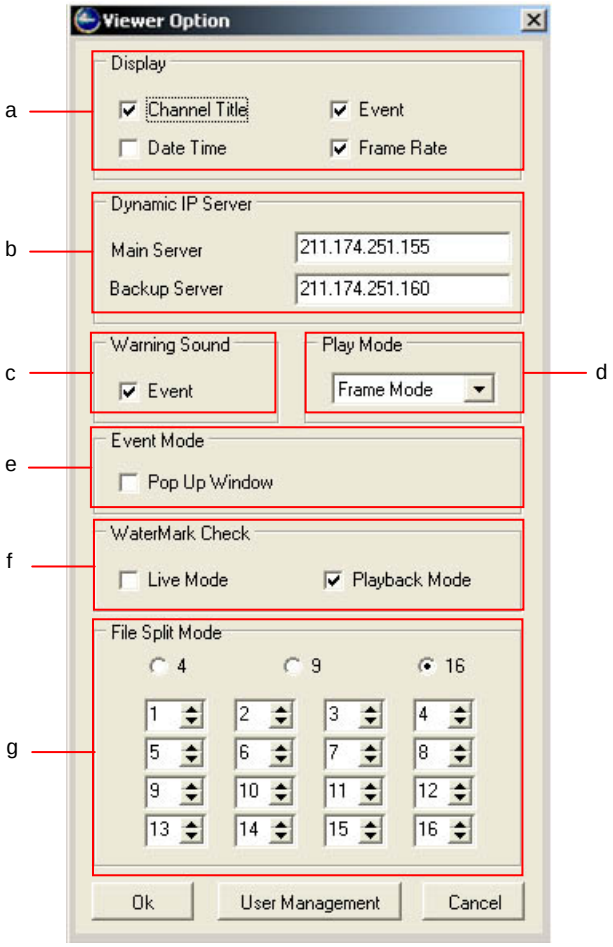
5 ~ 9 DVRS

10 ~ 16 DVRS

6. VIEWER OPTION

Viewer option defines the administrative options for the DVR Viewer, such as display options and the IP address of the Dynamic IP Server, and user management to create user name and passwords for additional users to access the DVR Viewer.

A. Viewer Option



a. Display
Check or uncheck various On Screen Display options as needed. By default, Channel Title, Event and Frame Rate are checked.

b. Dynamic IP Server
Modify the IP address for the Dynamic IP Servers as needed. The default IP addresses are:

- Primary Server: 211.174.251.155
- Secondary Server: 211.174.251.160

c. Warning Sound
Toggle event notification warning sound on or off. The default is on.

d. Play Mode
Field vs. Frame mode.

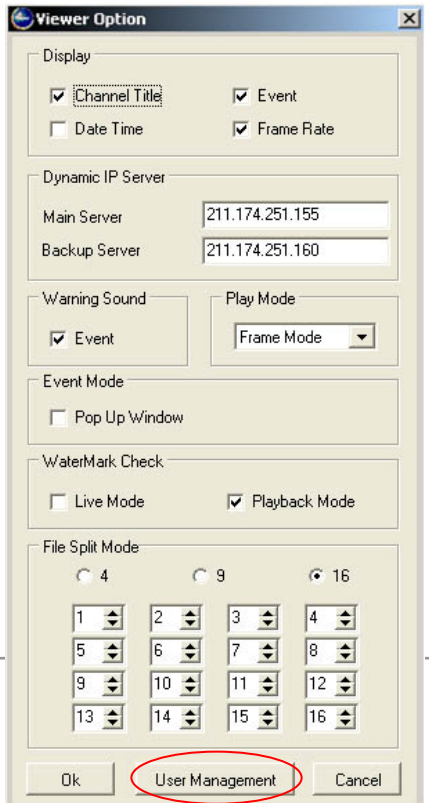
e. Event Mode
When any event happens during hiding the DVR Viewer, the DVR Viewer window will pop up on your PC. The default is off.

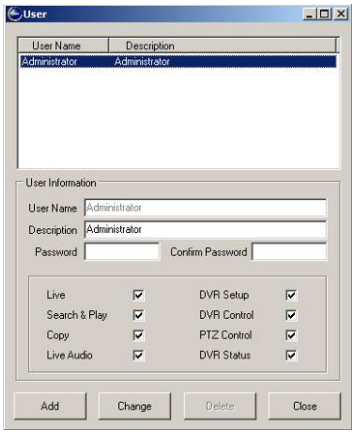
f. Watermark Check
Checks for the authenticity of the data during live stream or playback stream.

g. File Split Mode
Customize the channel order during playback using File Search.

6.2 User Management

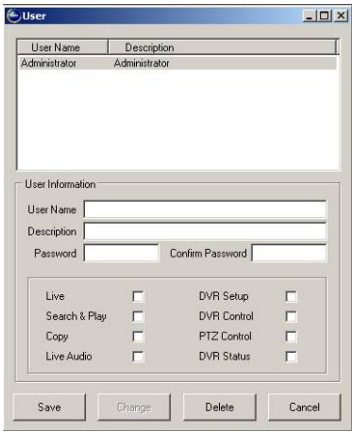
Click on USER MANAGEMENT to access the User Management window.



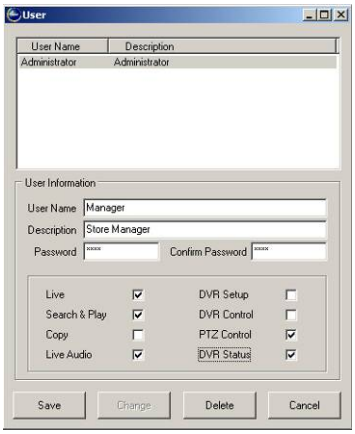


Modify the administrator's description and passwords as needed. Up to 20 alphanumeric characters can be entered for the password.

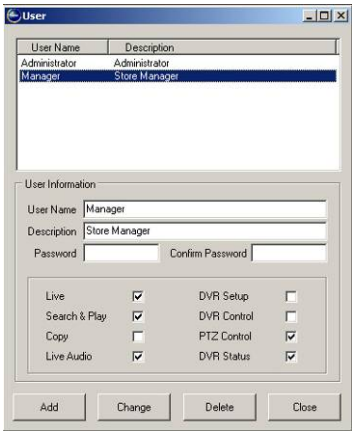
Press CHANGE to save the modification.



To add additional users, click on ADD.



Enter the user name, description for the user, password and access privileges, and then click on SAVE to add the new user.



The user setting can be modified by highlighting the user and clicking on CHANGE once the changes are made.

7. Channel DISPLAY WINDOW
Live or playback video from the DVR is transmitted and displayed up to 16 channels. Each channel displays information regarding the specific channel according to the settings in VIEWER OPTION.

8. DVR CLOSE
The connected DVR can be disconnected by clicking on this button.

9. ATTACH / DETACH WINDOW
The channel display window can be attached or detached to the controls by clicking on this button.

10. TIME & VERSION DISPLAY
Displays the local time and current DVR Viewer version.

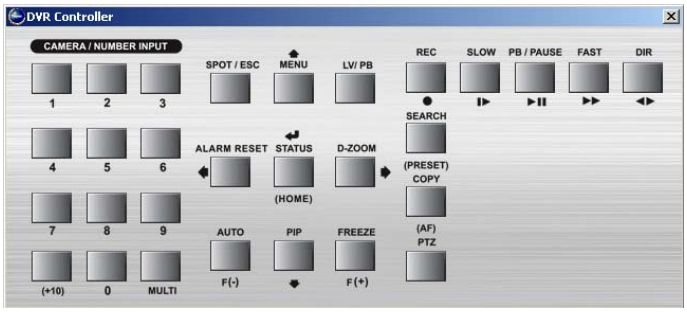
11. Channel DISPLAY SELECTION
Any one of the single channels can be viewed in full screen mode by clicking on any channel numbers.

12. DISPLAY / MULTI Channel VIEW MODE
Depending on the model of the DVR, the channel view modes can be changed by toggling on this button: 16 channel view mode, 13 channel view mode, 10 channel view mode, 9 channel view mode, 8 channel view mode, 7 channel view mode, 6 channel view mode, and quad view mode.

13. AUTOMATIC SEQUENCE DWELL TIME
Defines the dwell time for the automatic sequencing of view modes. Select from 1 to 9 seconds. The default is 3 seconds.

14. AUTOMATIC SEQUENCE
The channels sequence through different view modes automatically by enabling the AUTO button. Click on AUTO once more to stop the automatic sequence.

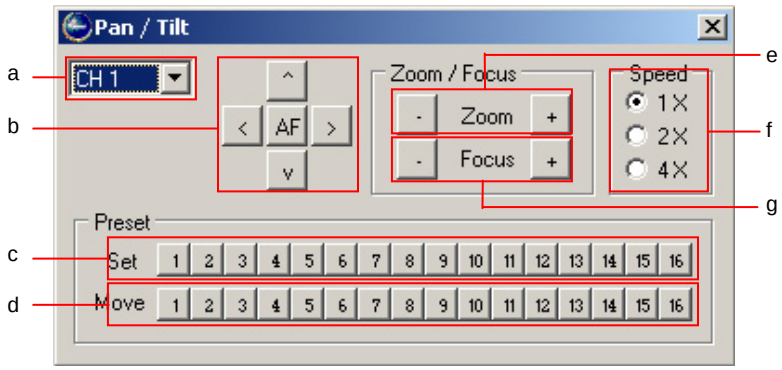
15. DVR CONTROLLER



Just as the IR remote controller, mouse and the front buttons on the DVR, the client software provides a controller to control the DVR remotely. The button functions are

identical to the front buttons of the Digital Video Recorder. For more information on button functions, please see 2.1 FRONT PANEL LAYOUT under II. 16 Channel DVR/8 Channel DVR/4 Channel DVR LAYOUT on page 17.

16. PTZ CONTROLLER



Pan, Tilt and Zoom cameras can be controlled remotely through the DVR Viewer.

a. Channel select
Select the channel in which the PTZ camera is installed.

b. Directional buttons / Autofocus
Move the PTZ camera using the directional buttons. Toggle Autofocus on or off by clicking on AF.

c. Set preset points
Move the PTZ camera to the desired location, and then click on any of the 16 buttons to set a preset position.

d. Move to preset points
Click on any of the 16 buttons to move the PTZ camera to predefined preset position.

e. Zoom control
Zoom in and out by clicking on the – or + buttons.

f. PTZ movement speed
Select the movement speed ratio.

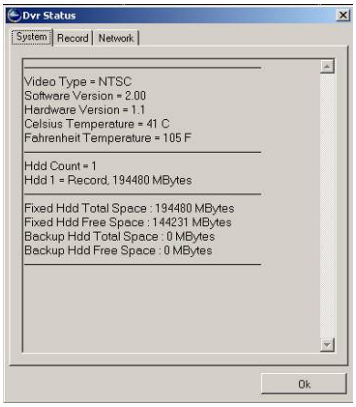
g. Focus control
Focus in and out by clicking on the – or + buttons.

17. SETUP
Access the DVR setup window. Please see Section VI – DVR Menu Page 75.

18. STATUS

Displays the current DVR status on System, Record and Network.

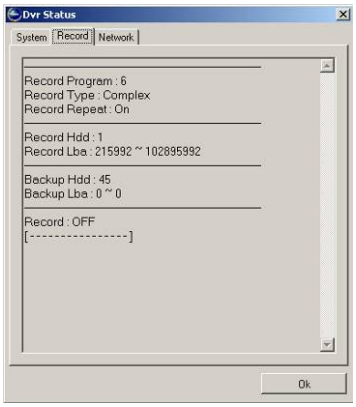
18.1 System


Dvr Status
System
Record
Network
Video Type = NTSC
Software Version = 2.00
Hardware Version = 1.1
Celsius Temperature = 41 C
Fahrenheit Temperature = 105 F
Hdd Count = 1
Hdd 1 = Record, 194480 MBytes
Fixed Hdd Total Space : 194480 MBytes
Fixed Hdd Free Space : 144231 MBytes
Backup Hdd Total Space : 0 MBytes
Backup Hdd Free Space : 0 MBytes
Ok

System status displays the following information:

- Video type
- Software version
- Hardware version
- Current temperature of the DVR in both Celsius and Fahrenheit
- Total number of hard disk drives
- Recording mode of the hard disk drives
- Total space of fixed hard disk drive
- Remaining free space of fixed hard disk drive
- Total space of backup hard disk drive
- Remaining free space of backup hard disk drive

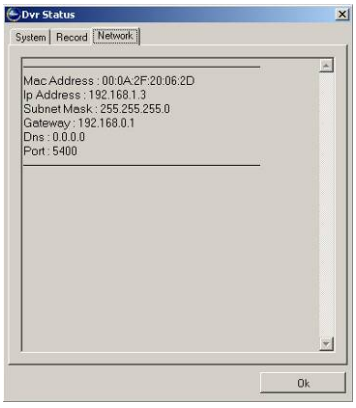
18.2 Record



Record status displays the following information:

- Record program
- Event record mode
- Record repeat
- Number of record hard disk drives
- Logical Block Address of the record hard disk drives
- Number of backup hard disk drives
- Logical Bock Address of the backup hard disk drives
- Record status

18.3 Network

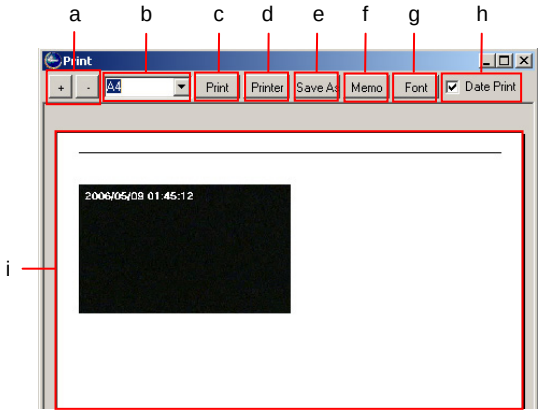


Network status displays the following information:

- Mac address
- IP address
- Subnet mask
- Gateway
- DNS
- Port

19. PRINT

In live or playback mode, select any of the channels and then click on PRINT to bring up the screen print window.



a. Zoom in / out

Click the + or – button to zoom in and out for the detailed view of the picture.

b. Paper size

Select the paper size. Available paper sizes are A3, A4, A5, B4, B5, Legal and Letter.

c. Print

Send the picture to the printer.

d. Printer

Select a printer to send the picture.

e. Save as

The picture can be saved as a JPEG or Bitmap format.

f. Memo

Add the memo for the picture to be printed.

g. Font

Select the font for the memo.

h. Date print

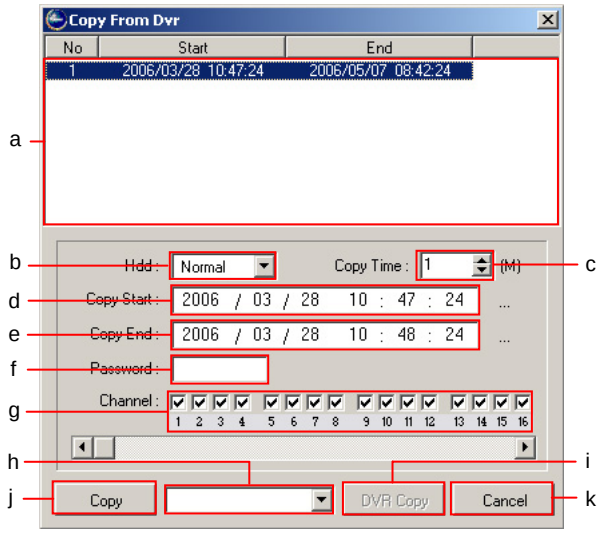
Select the date print option on or off.

i. Preview window

The picture to be printed is previewed in this section.

20. COPY

The data on the DVR can be downloaded onto the PC using the COPY function. The data can also be backed up directly onto available backup media on the DVR.



a. Available data

Displays available data to be downloaded.

b. Hard disk drive selection

Select the hard disk drive to download from. If unknown, leave the selection on NORMAL.

c. Copy time

Define the interval of the file to be downloaded. Available time interval is 1 through 60 minutes. As the value is adjusted, the COPY END value will be automatically adjusted.

d. Copy start

Enter the starting time of the data to be downloaded.

e. Copy end

Enter the end time of the data to be downloaded.

f. Password

Encrypt the downloaded copy with a password. Up to 8 numbers can be entered for the password.

g. Channel

Select the channels to be downloaded.

h. DVR media
Select the media on which the DVR will utilize for backup. All three USB ports and the internal DVD burner can be selected.

i. Copy
Click on copy after all parameters for downloading.

j. DVR copy
After selecting the media to be backed up on the DVR, click on DVR COPY to begin the backup process on the DVR.

k. Cancel
Exit from the COPY window.

21. MICROPHONE / TALK
For the voice communication over the internet, click on the MICROPHONE button and then talk into an available microphone.

22. SPEAKER / LISTEN
Listen in on any of the four channels with audio recording over the internet. Bring any one of the channels with audio recording to full screen to listen into a specific channel.

23. TIME SEARCH
Search for a specific time for remote playback using a time line. Please see 10.5.1 TIME SEARCH under 10.5 DVR VIEWER – PLAYBACK MODE on page 152.

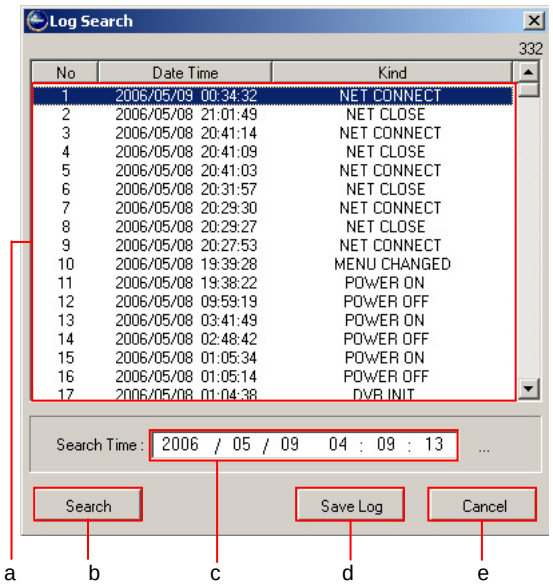
24. CALENDAR SEARCH
Search for a time for remote playback using a calendar based search window. Please see 10.5.2 CALENDAR SEARCH under 10.5 DVR VIEWER – PLAYBACK MODE on page 153.

25. EVENT SEARCH
Search for events for remote playback. Please see 10.5.3 EVENT SEARCH under 10.5 DVR VIEWER – PLAYBACK MODE on page 154.

26. TEXT SEARCH
Search for text strings or keywords for Point of Sales integrated DVRs. Please see 10.5.4 TEXT SEARCH under 10.5 DVR VIEWER – PLAYBACK MODE on page 155.

27. BLOCK SEARCH
Search on Logical Block Address for remote playback. Please see 10.5.5 BLOCK SEARCH under 10.5 DVR VIEWER – PLAYBACK MODE on page 157.

28. LOG SEARCH
View a list of events that occurred on the DVR.



a. Log list window
List of DVR logs from the most recent to the oldest.

b. Search
Click on search to view available log list.

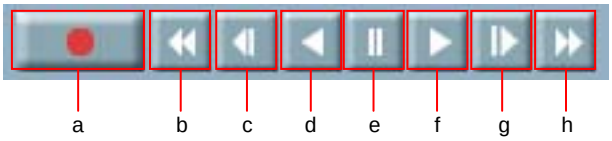
c. Search time
Select the year, month, date, hour, minutes and seconds of the *end* of the log list to retrieve.

d. Save log
Save the log list onto the computer.

e. Cancel
Exit from the log search window.

29. RECORD / PLAYBACK BUTTONS

The remote playback can be controlled just as on the DVR. The remote playback can be played in normal, slow, and fast modes in both forward and reverse direction.
The DVR Viewer can also record the remote transmission onto the computer's hard disk drive.



a. Record
Click on the RECORD button to start recording on to the computer. When recording, the box below the main channel display window will be outlined in red.

b. Rewind
This button can be toggled for rewind speed of 2x, 4x, 8x, 16x, 32x, 64x and 128x.

c. Reverse slow
This button can be toggled for a slow reverse playback speed of 1/2x, 1/4x, 1/8x, 1/16x, 1/32x, 1/64x and 1/128x.

d. Reverse play
Normal speed playback in reverse direction.

e. Pause
Pause the playback during remote playback or live monitoring.

f. Play
Normal speed playback in forward direction.

g. Forward slow
This button can be toggled for a slow forward playback speed of 1/2x, 1/4x, 1/8x, 1/16x, 1/32x, 1/64x and 1/128x.

h. Fast forward
This button can be toggled for fast forward speed of 2x, 4x, 8x, 16x, 32x, 64x and 128x.

30. Channel STATUS
Displays the status of the channels.

- Grey: non-recording mode
- Yellow: manual recording mode
- Red: event recording mode
- Green: schedule recording / playback mode

31. LIVE
When the DVR Viewer is connected to the DVR, it starts with the live view mode, and this button will be pressed and highlighted. Click on LIVE to toggle back to live view mode.

32. PLAY
The remote playback mode can be entered by clicking on PLAY button, just as the PLAY button is pressed on the DVR. When the PLAY button is clicked the remote playback will start with the oldest data on the DVR. Next time PLAY button is clicked the playback will resume from where it was left off.

33. FRAMES PER SECOND
Displays the frame rate of incoming live stream or playback stream.

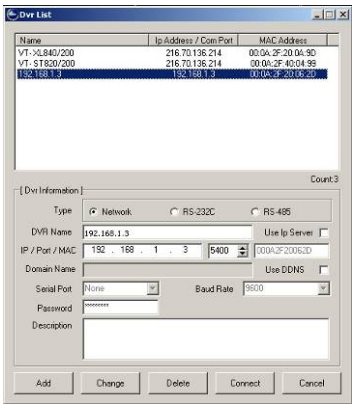
34. LIVE / PLAYBACK BUTTON STATUS
During live or playback, this window will display the direction and the speed of the playback direction.

35. RELAY 4
Manually trigger relay 4 on the DVR. The relay 4 option must be set to user option.

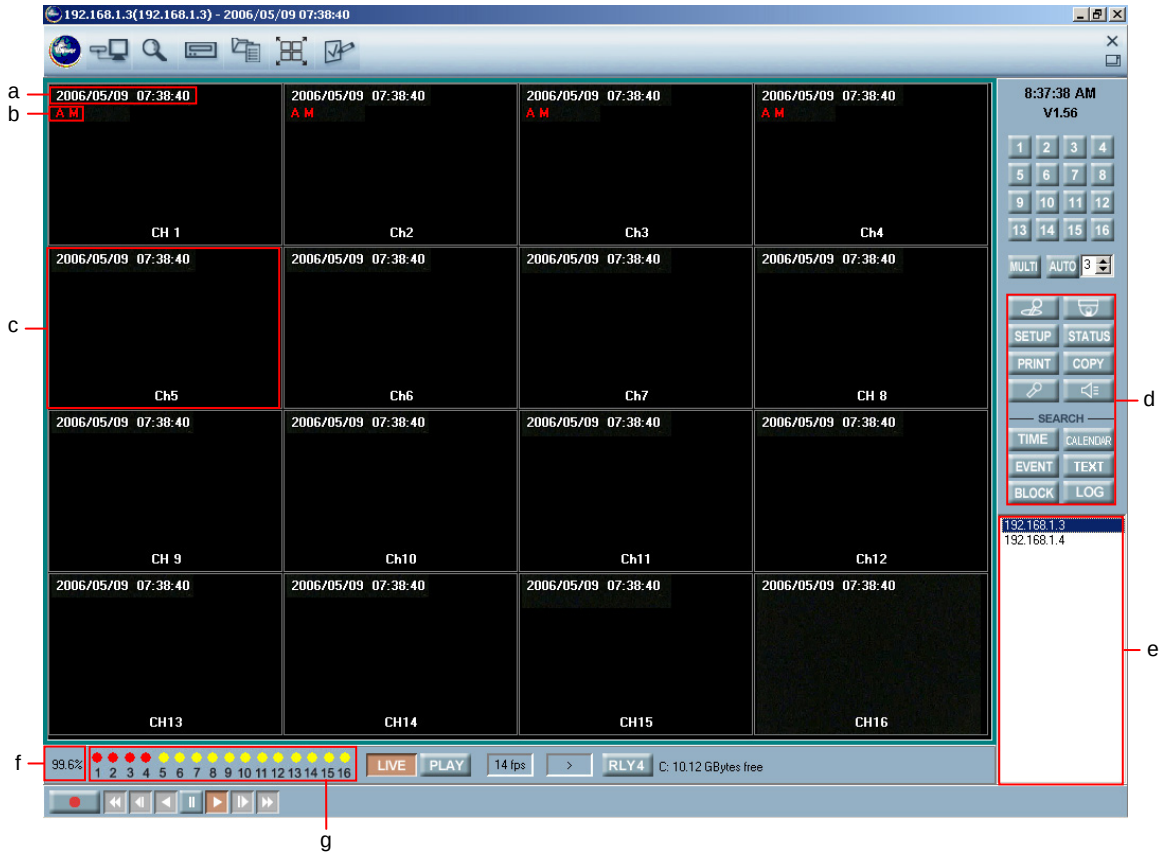
36. AVAILABLE SPACE ON COMPUTER
When connected to a DVR, this section will display available recording space on the computer.

37. ACTIVE DVR / FILE / HDD
Displays a list of connective DVRs, playback from FILE SEARCH and HDD SEARCH.

10.4 DVR VIEWER - LIVE MODE



Click on the DVR LIST, highlight a desired DVR and then click on CONNECT.



a. DVR's local time
Displays the DVR's local date and time

b. Event message
Displays the channel's event messages, alarm and motion.

c. Channel window

The DVR channel window can be double-clicked for a full screen mode. The channel window can also be zoomed by dragging the left mouse button over the channel window. The size of the box created by dragging will be the outline of the channel window to be zoomed in.

d. DVR functions

Some of the DVR functions may not be available depending on what user account the DVR Viewer has been signed on with, and also with what user level password the DVR has been connected to.

e. DVRs online

If more than one DVR is connected, then the live view of the DVRs can be selected by clicking on the desired DVR name.

f. Remaining HDD space

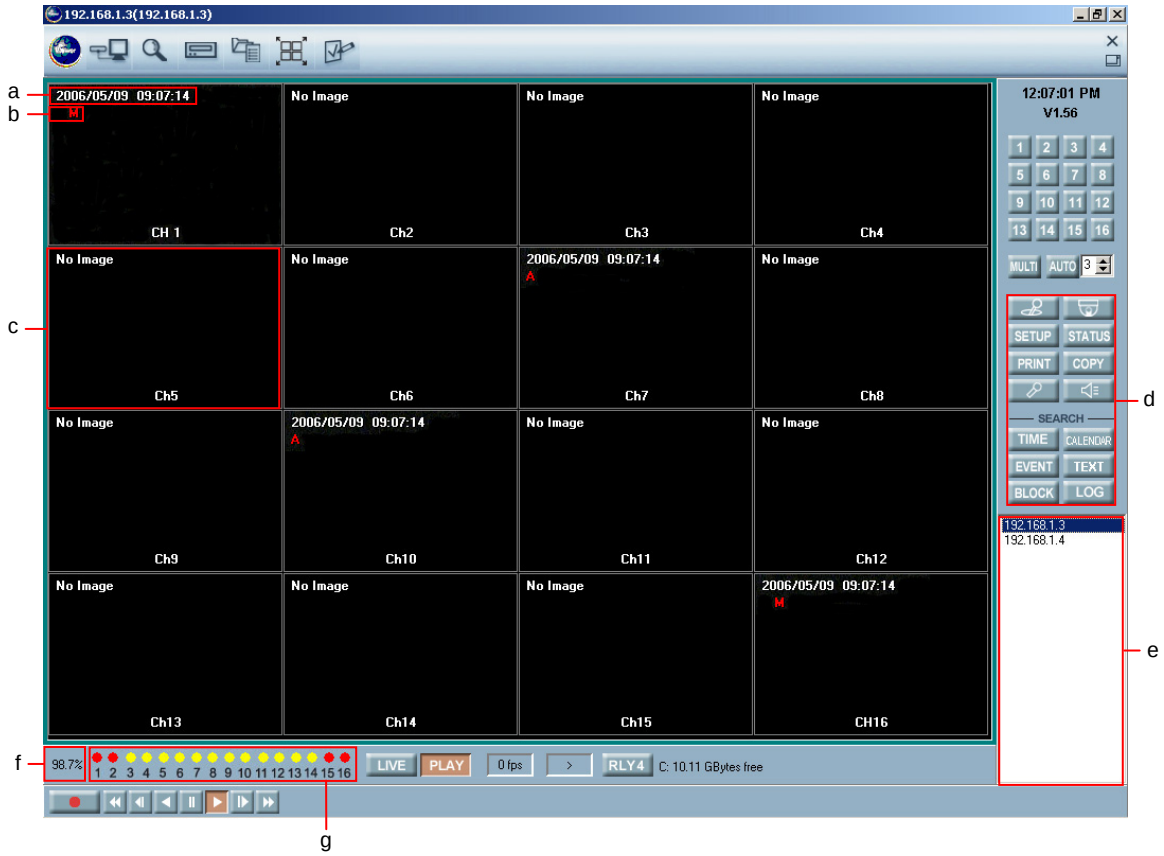
Displays remaining hard disk drive space on the DVR.

g. Channel status

Displays the status of the channels.

10.5 DVR VIEWER – PLAYBACK MODE

Any DVRs that are connected online can be accessed to do data search remotely from the DVR and then transmit to the DVR viewer for remote playback.



a. DVR's playback time

Displays the DVR's playback date and time. Channels without recording show NO IMAGE.

b. Event message

Displays the channel's event messages at the time of the recording.

c. Channel window

The DVR channel window can be double-clicked for a full screen mode. The channel window can also be zoomed by dragging the left mouse button over the channel window. The size of the box created by dragging will be the outline of the channel window to be zoomed in.

d. DVR functions

Some of the DVR functions may not be available depending on what user account the DVR Viewer has been signed on with, and also with what user level password the DVR has been connected to.

e. DVRs online

The live view of different DVRs can be selected, as well as the playback mode, by clicking on the desired DVR name.

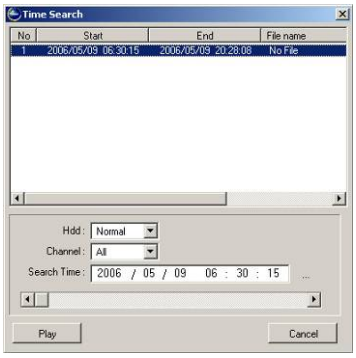
f. Remaining HDD space

Displays remaining hard disk drive space on the DVR.

g. Channel status

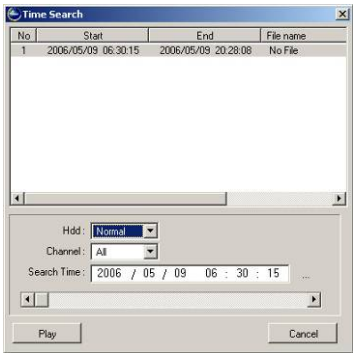
Displays the status of the live channels.

10.5.1 TIME SEARCH

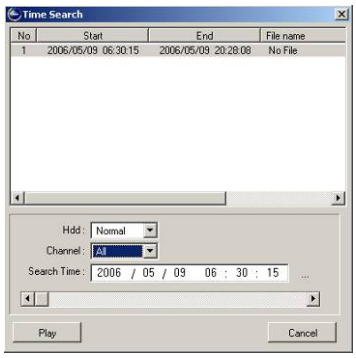


Click on TIME to display the Time Search window.

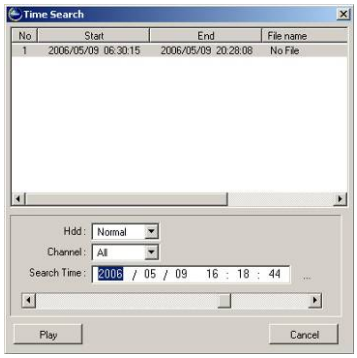
The start and the end of the recorded data will be displayed.



Select the hard disk drive for the remote playback. If unknown, leave the selection to Normal.



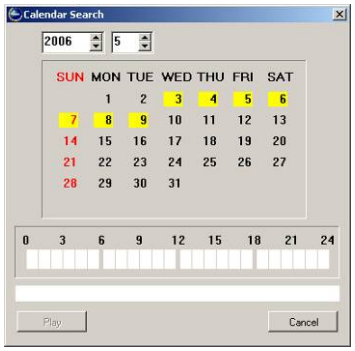
Select the channel for playback.



Select the year, month, day and time for the playback, or slide the time bar to the desired time.

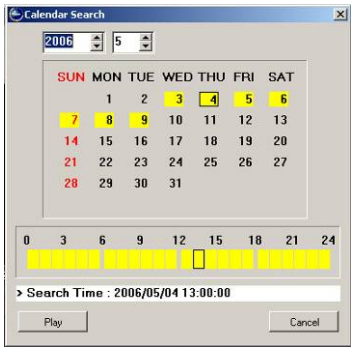
Click on PLAY to begin the remote playback.

10.5.2 CALENDAR SEARCH



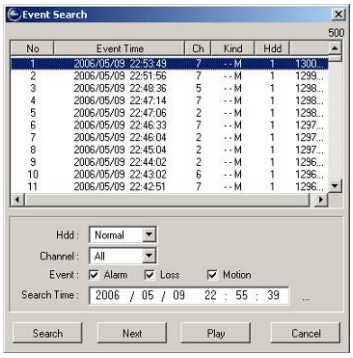
Click on CALENDAR to display the Calendar Search window.

Dates with recorded data will be highlighted in yellow.



Select the year, month, date, and the hour block, and then click on PLAY to begin the remote playback.

10.5.3 EVENT

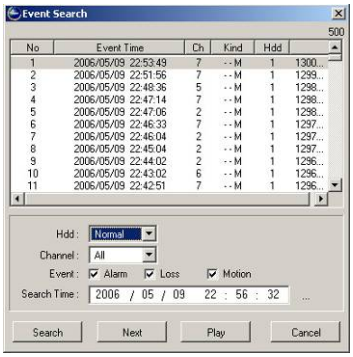


Click on EVENT to display the Event Search window.

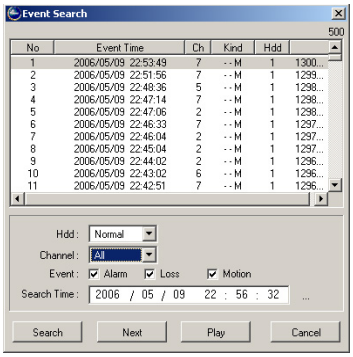
The first 500 events are listed chronologically, from the most recent to the oldest.

Select an event and then click on PLAY to begin remote playback.

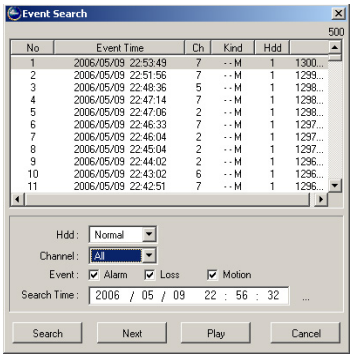
If the desired event is not listed in the current window, then follow the following steps.



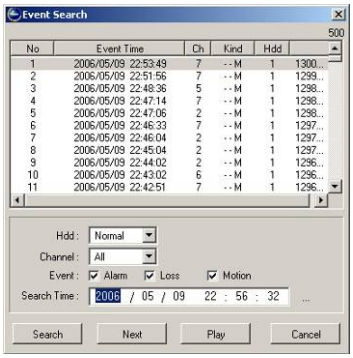
Select the hard disk drive for the remote playback. If unknown, leave the selection to Normal.



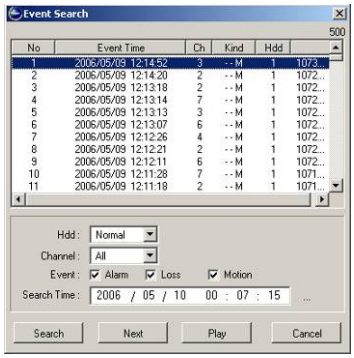
Select the channel for playback.



Select the event categories.

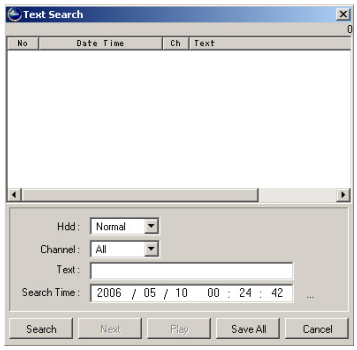


Select the year, month, day and time for the *end* of the event list for playback.

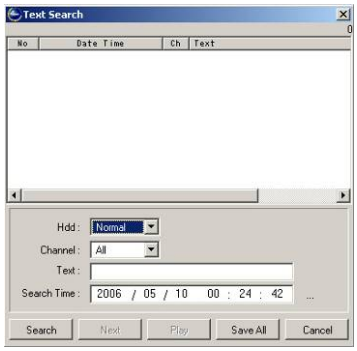


The list can be advanced to the next 500 lists by clicking on NEXT. Highlight the desired event and then click on PLAY to begin the remote playback.

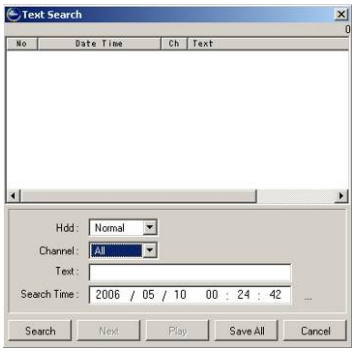
10.5.4 TEXT



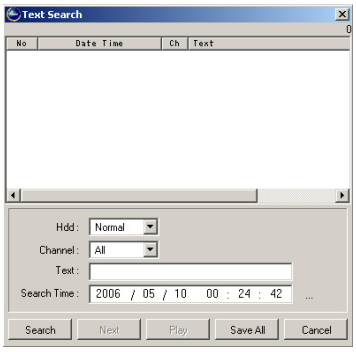
Click on TEXT to display Text Search window.



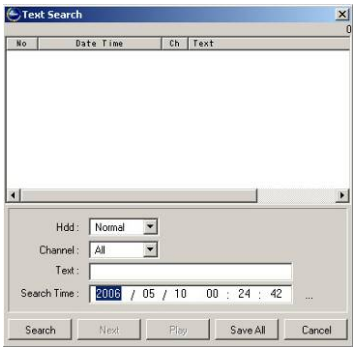
Select the hard disk drive for the remote playback. If unknown, leave the selection to Normal.



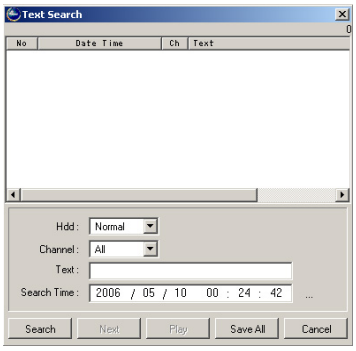
Select the channel for the text string search.



Enter the text string to search. Leave blank for a wild card (all items) search.



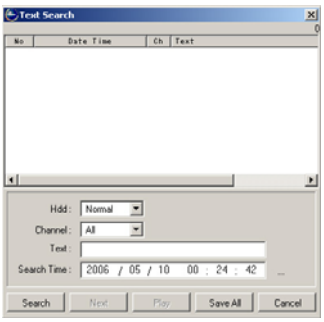
Select the year, month, day and time for the *end* of the search time.



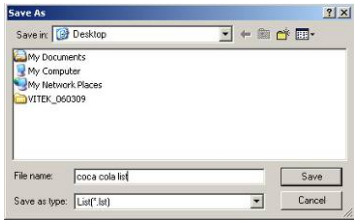
Click on SEARCH to list data that match the text string.

If the text string search was left blank, then it will display all items.

Click on NEXT for the next 500 listing.

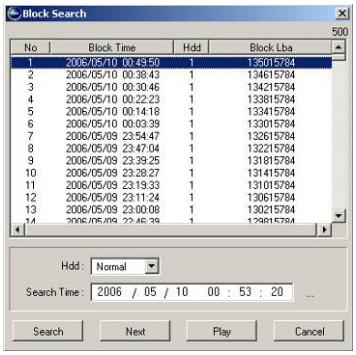


Highlight a text string, and then click on PLAY to begin the remote playback.



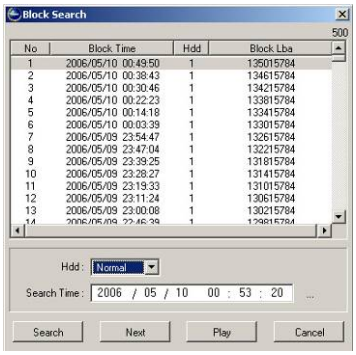
The listing can be saved as a List file format.

10.5.5 BLOCK

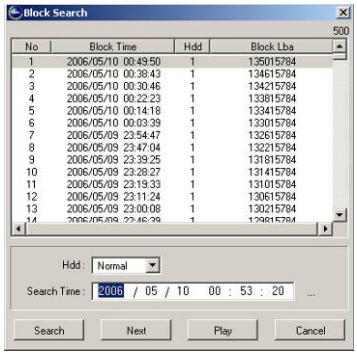


Click on BLOCK to display the Logical Block Address Search window.

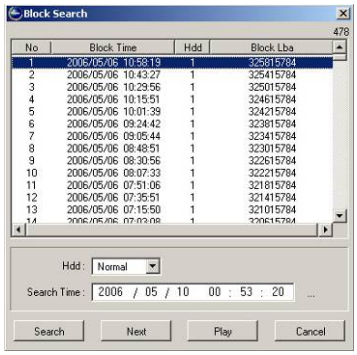
The first 500 data is displayed in chronological order, from the most recent to the oldest.



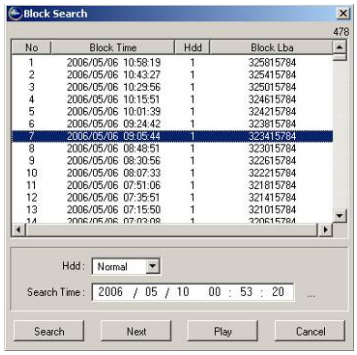
Select the hard disk drive for the remote playback. If unknown, leave the selection to Normal.



Select the year, month, day and time for the end of the data.



If the desired date and time is not found, then click on NEXT to display the next 500 Logical Block Addresses.

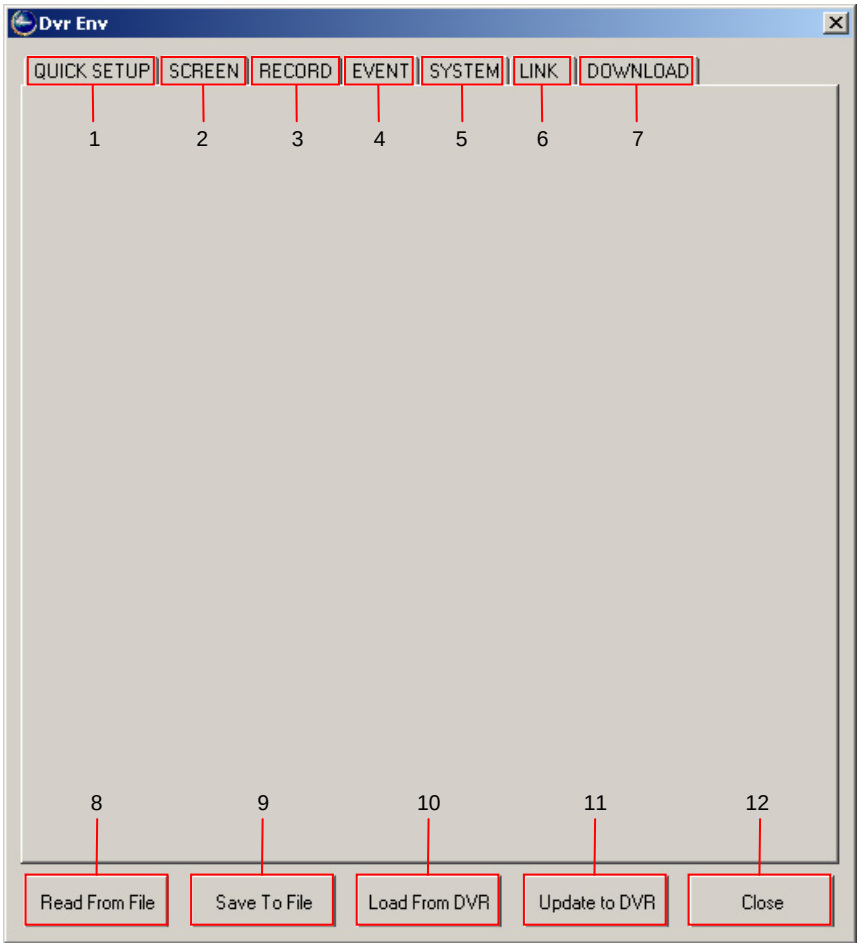


Highlight a desired block time and then click on PLAY to begin the remote playback.

10.6 DVR PLAYER – SETUP

The DVR Viewer can change the settings on the DVR remotely. The features and settings are identical to that of the DVR menu. For more information, please see V. DVR MENU on page 75.

Click on SETUP and the password prompt will be displayed. Enter the administrator's password and then click on OK to display the DVR setup menu.



1. QUICK SETUP
2. SCREEN SETUP
3. RECORD SETUP
4. EVENT SETUP

5. SYSTEM SETUP

6. LINK

7. DOWNLOAD
Update the DVR's firmware using the download menu.

8. READ FROM FILE
Load DVR settings from a DVR setup file.

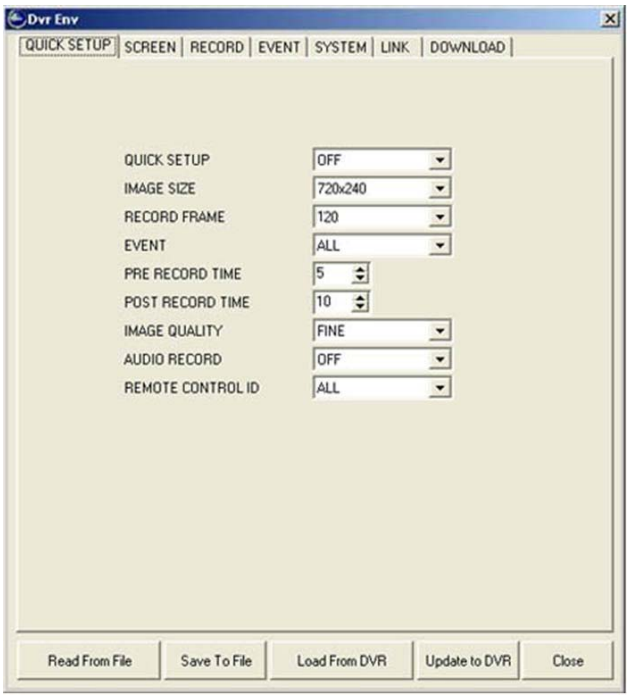
9. SAVE TO FILE
Save DVR settings to a DVR setup file.

10. LOAD FROM DVR
Load current DVR settings.

11. UPDATE TO DVR
Upload changed settings to DVR.

12. CLOSE
Close DVR Setup menu.

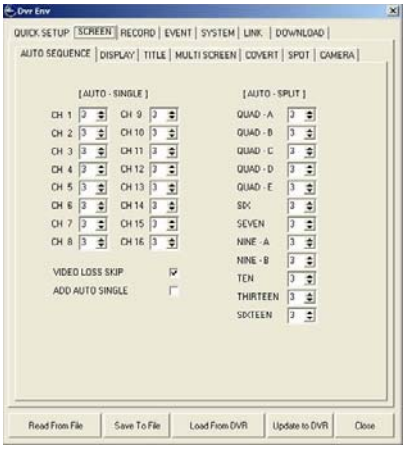
10.6.1 QUICK SETUP



a. Quick Setup: on / off.
b. Image Size: 360 x 240 / 720 x 240 / 720 x 480.
c. Record Frame: 16 through 480, depending on image size.
d. Event: off, all, alarm, v-loss, motion, alarm & loss, alarm & motion, loss & motion.
e. Pre Record Time: 0 through 5 seconds.
f. Pose Record Time: 0 through 60 seconds.
g. Image Quality: low, fine, superfine.
h. Audio Record: on / off.
i. Remote Control ID: all, 11 ~ 14, 21 ~ 24, 31 ~ 34 and 41 ~ 44.

10.6.2 SCREEN

10.6.2.1 Auto Sequence

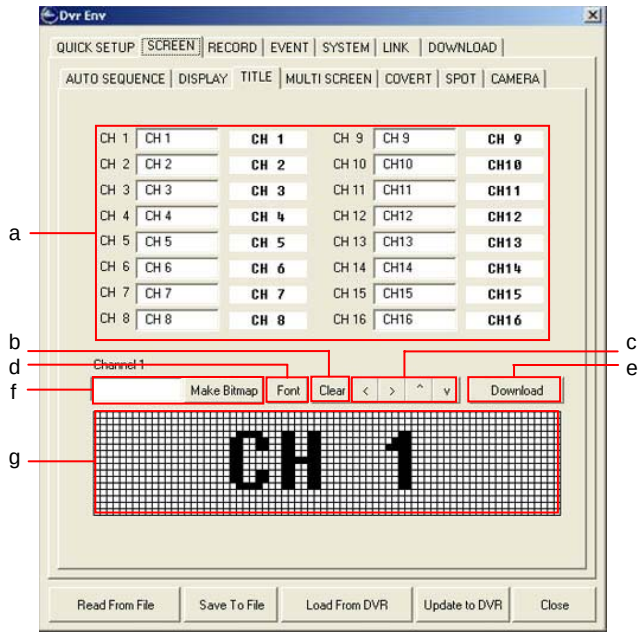


a. Auto-Single: select the single channel dwell time.
b. Auto-Split: select the multi channel dwell time.
c. Video Loss Skip: check / uncheck.
d. Add Auto Single: check / uncheck.

10.6.2.2 Display

a. HDD Free Space: on / off.
b. HDD Free Space Mode: percent / gigabyte.
c. Record Status: on / off.
d. Clock Display: on / off.
e. Date & Time Mode: YY/MM/DD, MM/DD/YY, DD/MM/YY.
f. Title Display: on / off.
g. Title Mode: text / bitmap.
h. Border Color: white / black.
i. Remote Control ID: on / off.
j. Spot Title Display: on / off.

10.6.2.3 Title



a. Channel Title (text mode)
Enter up to eight alphanumeric characters for channel titles.

b. Clear
Clear the bitmap drawing.

c. Move
Move the bitmap drawing in the grids.

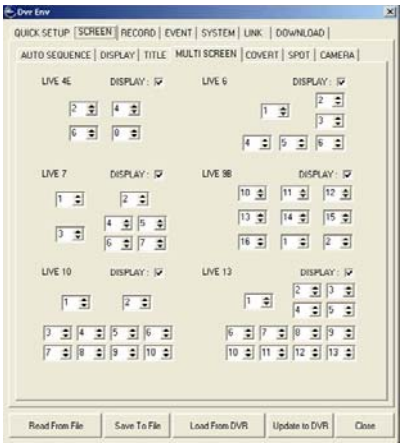
d. Font
Select the font for bitmap conversion.

e. Download
Download the bitmap to the DVR.

f. Make Bitmap
Enter the title to be converted into bitmap.

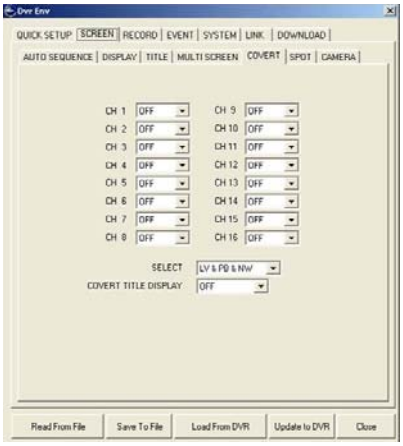
g. Bitmap Grid
The title can be drawn here.

10.6.2.4 Multiscreen



Customize the channels to be displayed in 4E, 6, 7, 9B, 10 and 13 channel view modes.

10.6.2.5 Covert



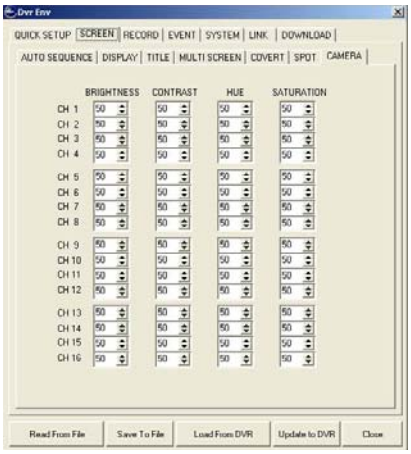
a. Channels 1 through 16: on / off.
b. Select: live, play, network, LV & PB, LV & NW, PB & NW, all.
c. Title Display: on / off.

10.6.2.6 Spot

Dvr Env
QUICK SETUP | SCREEN | RECORD | EVENT | SYSTEM | LINK | DOWNLOAD
AUTO SEQUENCE | DISPLAY | TITLE | MULTI SCREEN | COVERT | SPOT | CAMERA
SPOT MODE MANUAL
SPOT SEQUENCE TIME 3
ADD SPOT MULTI OFF
VIDEO LOSS SKIP ON
Read From File
Save To File
Load From DVR
Update to DVR
Close

a. Spot Mode: manual, event, sequence.
b. Spot Sequence Time: 1 to 60 seconds.
c. Add Spot Multi: disabled.
d. Video Loss Skip: on / off.

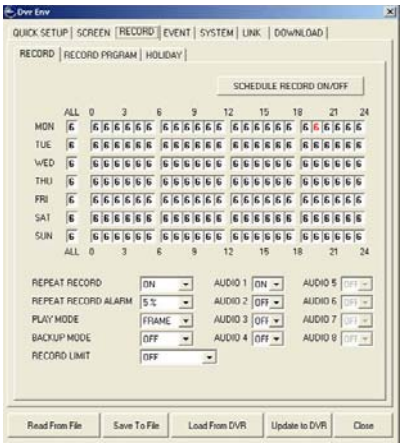
10.6.2.7 Camera



Adjust the brightness, the contrast, the hue and the saturation on each channel.

10.6.3 RECORD

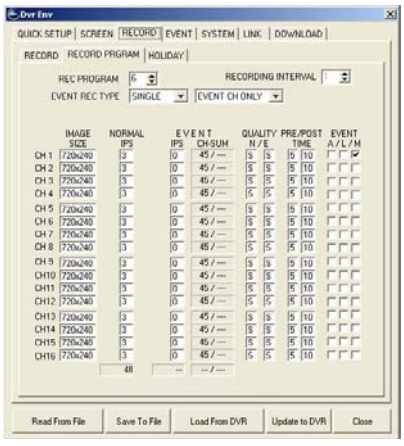
10.6.3.1 Record



a. Schedule Record: click on a hour block and then click Schedule Record on / off.
b. Monday through Sunday: select the record program.
c. Repeat Record: on / off.
d. Repeat Record Alarm: 5% through 10%, off.
e. Backup Mode: mirror, event, off.
f. Audio 1 through 8: on / off.
g. Record Limit: off / 1 day through 6 days / 1 week through 4 weeks / 1 month through 11 months / 1 year

10.6.3.2 Record Program

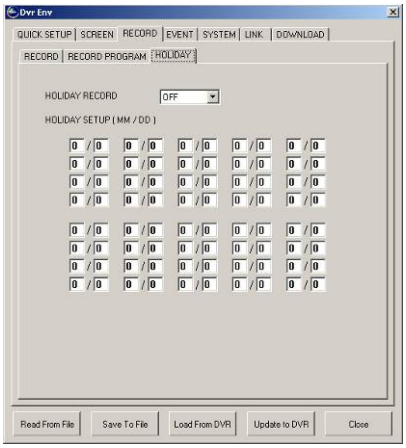
Define the values for the record settings. Use the mouse scroll button to change the values, or the left/right buttons on the keyboard.



a. Record Program: 0 to 9.
b. Event Record Type: single / complex, event channel only / all channels.
c. Image Size: select the recording image size.
d. Normal Record: select the recording rate for manual recording.
e. Event Record: select the recording rate.
f. Quality Normal: select the image quality for manual recording.

g. Quality Event: select the image quality for event recording.
h. Pre Record Time: select the pre-event recording time.
i. Post Record Time: select the post-event recording time.
j. Event Alarm / Video Loss / Motion: check / uncheck event recording options.

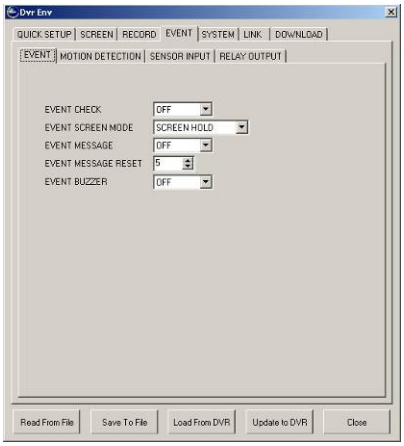
10.6.3.3 Holiday



a. Holiday Record: on / off.
b. Holiday Setup: enter the holidays.

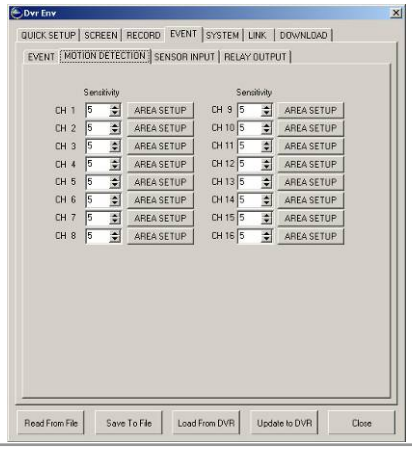
10.6.4 EVENT

10.6.4.1 Event

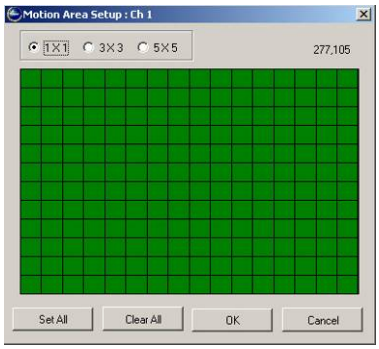


a. Event Check: on / off.
b. Event Screen Mode: screen hold, event full, event multi, event full return, event multi return.
c. Event Message: on / off.
d. Event Message Reset: 1 to 30 seconds.
e. Event Buzzer: on / off.

10.6.4.2 Motion Detection



a. Sensitivity: select the motion detection sensitivity.
b. Area Setup: click on AREA SETUP to display the motion grid window.

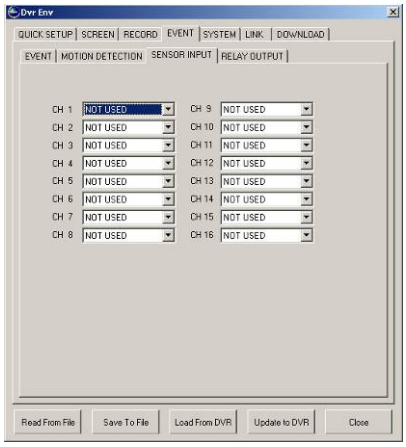


Select the grid size.

Use the left mouse button to draw motion detection area and use the right mouse button to erase motion detection area.

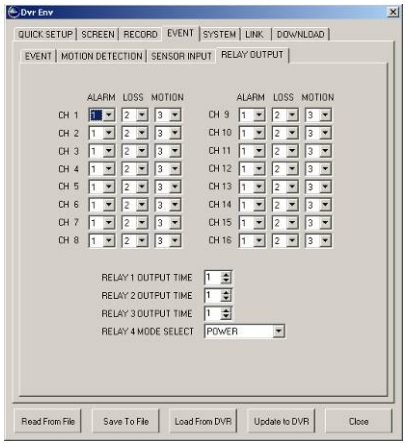
Use the buttons at the bottom of the screen to set or clear motion detection all area of the screen.

10.6.4.3 Sensor Input



Select the circuit type for the sensor input.

10.6.4.4 Relay Output



a. Channel 1 through 16: select the relay output for the events.
b. Relay 1 through 3 output time: 1 to 30 seconds.
c. Relay 4 mode select: not used, HDD error, power, user.

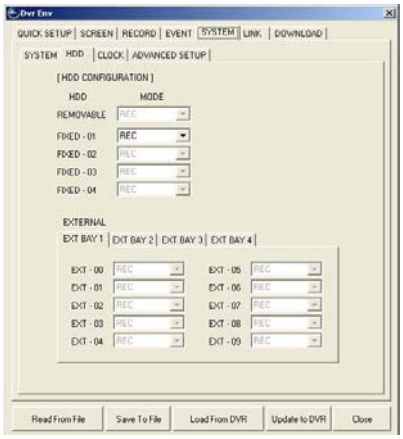
10.6.5 SYSTEM

10.6.5.1 System

Dvr Env
QUICK SETUP | SCREEN | RECORD | EVENT | SYSTEM | LINK | DOWNLOAD
SYSTEM | HDD | CLOCK | ADVANCED SETUP
VIDEO STANDARD AUTO
LANGUAGE ENGLISH
REMOTE CONTROL ID ALL
KEY ECHO ON
Read From File
Save To File
Load From DVR
Update to DVR
Close

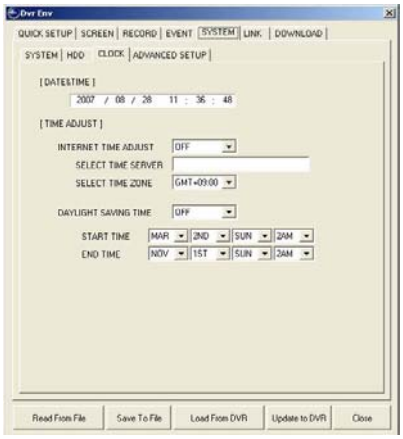
a. Video Standard: PAL, NTSC, auto.
b. Language: English, Korean, Japanese, Polish, Spanish, Russian, Chinese, Taiwanese, French, Turkish, German, Italian and Portuguese.
c. Remote Control ID: All, 11 through 14, 21 through 24, 31 through 34 and 41 through 44.
d. Key Echo: on / off.

10.6.5.2 HDD


Dvr Env
QUICK SETUP | SCREEN | RECORD | EVENT | SYSTEM | LINK | DOWNLOAD
SYSTEM | HDD | CLOCK | ADVANCED SETUP
[HDD CONFIGURATION]
HDD MODE
REMOVABLE REC
FIXED - 01 REC
FIXED - 02 REC
FIXED - 03 REC
FIXED - 04 REC
EXTERNAL
EXT BAY 1 | EXT BAY 2 | EXT BAY 3 | EXT BAY 4
EXT - 00 REC
EXT - 01 REC
EXT - 02 REC
EXT - 03 REC
EXT - 04 REC
EXT - 05 REC
EXT - 06 REC
EXT - 07 REC
EXT - 08 REC
EXT - 09 REC
Read From File
Save To File
Load From DVR
Update to DVR
Close

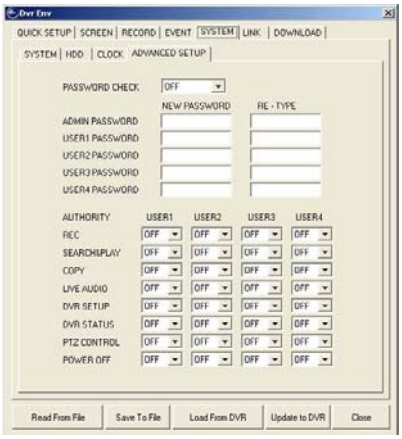
Select the recording mode for the HDD.

10.6.5.3 CLOCK


Dvr Env
QUICK SETUP | SCREEN | RECORD | EVENT | SYSTEM | LINK | DOWNLOAD
SYSTEM | HDD | CLOCK | ADVANCED SETUP
[DATE&TIME]
2007 / 08 / 28 11 : 36 : 48
[TIME ADJUST]
INTERNET TIME ADJUST OFF
SELECT TIME SERVER
SELECT TIME ZONE GMT+09:00
DAYLIGHT SAVING TIME OFF
START TIME MAR 2ND SUN 2AM
END TIME NOV 1ST SUN 2AM
Read From File
Save To File
Load From DVR
Update to DVR
Close

a. Date & Time: the date and time is displayed here cannot be modified.
b. Internet Time Server: on / off.
c. Select Time Server: enter the time server's IP address.
d. Select Time Zone: select the DVR's local time zone.
e. Day Light Savings Time: on / off.
f. Start Time: select the month, week, day and time.
g. End Time: select the month, week, day and time.

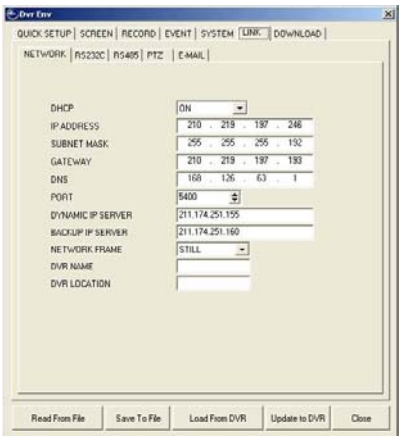
10.6.5.4 ADVANCED SETUP



a. Password Check: on / off
b. Passwords: define the DVR access passwords for all users.
c. Authority: define DVR access authority for users 1 through 4.

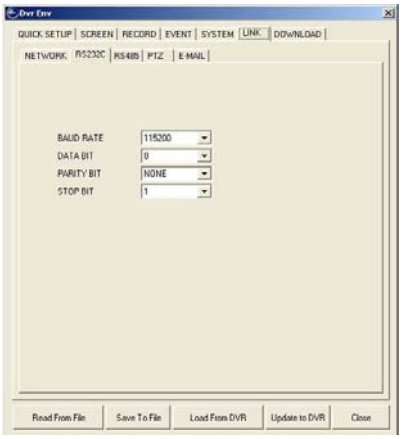
10.6.6 LINK

10.6.6.1 Network



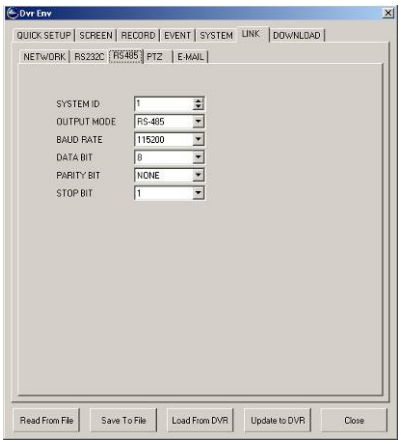
a. DHCP: on / off.
b. IP Address: enter the IP address.
c. Subnet Mask: enter the subnet mask.
d. Gateway: enter the gateway.
e. DNS: enter the DNS address.
f. Port: define port number.
g. Dynamic IP Server: enter the Dynamic IP Server address.
h. Backup IP Server: enter backup IP Server address.
i. DVR NAME: enter the DVR name for CMS.
j. DVR LOCATION: enter the DVR location for CMS.

10.6.6.2 RS-232C



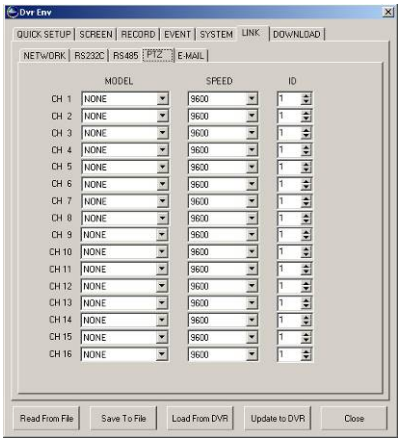
a. Baud Rate: select the communication speed.
b. Data Bit: select the data bit.
c. Parity Bit: select the parity bit.
d. Stop Bit: select the stop bit.

10.6.6.3 RS-485



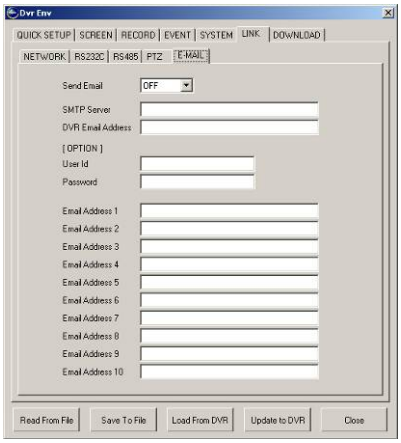
a. System ID: select the system ID.
b. Output Mode: select the output mode.
c. Baud Rate: select the communication speed.
d. Data Bit: select the data bit.
e. Parity Bit: select the parity bit.
f. Stop Bit: select the stop bit.

10.6.6.4 PTZ



a. Model: select the PTZ camera model.
b. Speed: select the communication speed.
c. ID: select the PTZ camera address.

10.6.6.5 E-mail

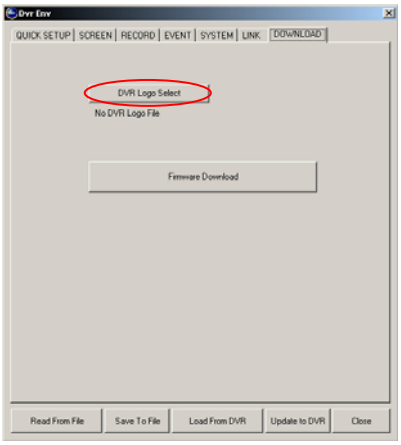


a. Send e-mail: on / off.
b. SMTP Server: enter the SMTP server address.
c. DVR e-mail Address: enter the DVR's e-mail address.
d. User ID: enter the DVR's user name for the e-mail account.
e. Password: enter the DVR's password for the e-mail account.
f. E-mail addresses 1 through 10: enter the e-mail addresses for e-mail notification.

10.6.7 DOWNLOAD

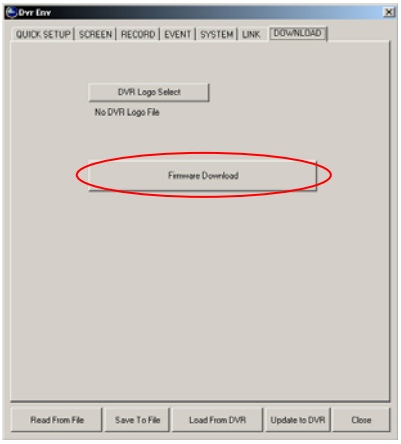
The DVR's firmware can be updated from the client software. Please remember that once the upgrade process begins, the connection ***must not*** be severed or interrupted.

10.6.7.1 DVR Logo Select

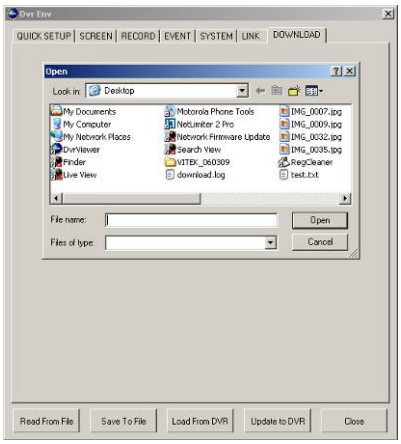


Reserved.

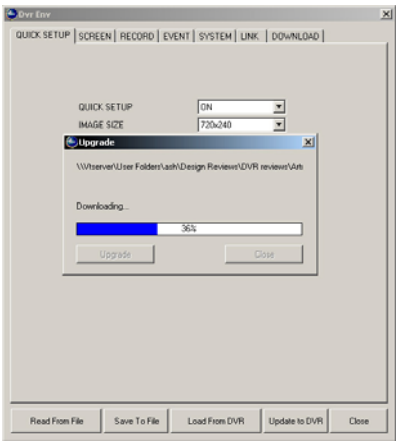
10.6.7.2 Firmware Download



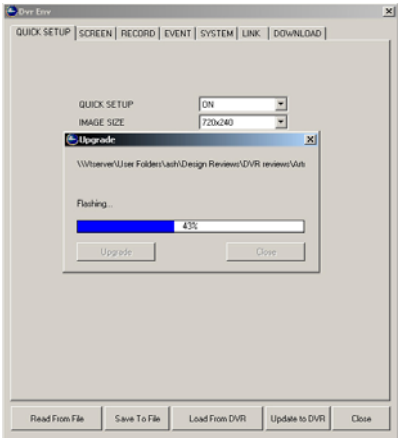
Click on FIRMWARE DOWNLOAD, and the DVR firmware open window will open.



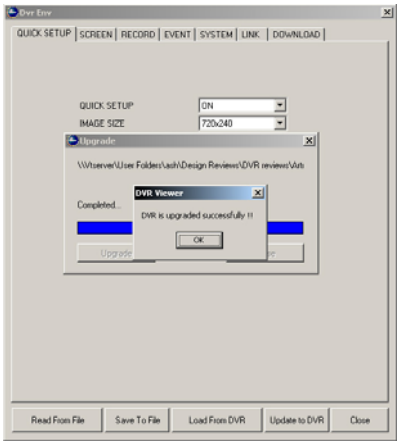
Locate the upgrade file and then click on OPEN to begin the upgrade process.



The file will begin loading onto the DVR.



Once the download is complete, the DVR will begin flashing the new firmware.



Once the upgrade is finished and successful, the DVR viewer will display “DVR Upgraded Successfully!!”

Restart the DVR, and the new firmware will be in effect.

XI. SPECIFICATIONS

11.1 16 Channel DVR

Video				
Video Standard	NTSC & PAL Standards, automatic configuration			
Video Input	16 Channels BNC			
Input Level	1.0 Vp-p ± 10% Composite, 75 Ohm Balanced.			
Loop Through Output	16 Channels BNC w/ Automatic Signal Boost			
Main Video Output	1.0 Vp-p Composite, 75 Ohm Balanced			
Spot Video Output	1.0 Vp-p Composite, 75 Ohm Balanced			
S-Video Output	4-pins mini DIN			
VGA Output	15 pins female DSUB			
Channel Title	8 Alphanumeric Characters / Bitmap Picture or Characters			
Live Display	1, 4, 6, 7, 9, 10, 13 & 16 w/ Customizable 4, 6, 7, 9, 10 & 13 Channel View Mode			
Spot Display	Single Channel View			
Live Display Resolution	NTSC	D1 (720 X 480)	HD1 (720 x 240)	CIF (360 x 240)
	PAL	D1 (720 X 576)	HD1 (720 X 288)	CIF (360 x 288)
Playback Display	1, 4, 6, 7, 9, 10, 13 & 16 w/ Customizable 4, 6, 7, 9, 10 & 13 Channel View Mode			
Automatic Sequence Interval	0 ~ 60 seconds			
Audio				
Codec	ADPCM			
Audio In	16 Channels			
Audio Out	1 Channel			
Input Level	0.5 ~ 1.4 Vp-p @ 20KOhm			
Recording				
Codec	MPEG4			
Recording Resolution	NTSC	D1 (720 X 480)	Half-D1 (720 X 240)	CIF (360 X 240)
	PAL	D1 (720 X 576)	Half-D1 (720 X 288)	CIF (360 X 288)
Recording Speed	NTSC	Max 60 ips @ D1	Max 120 ips @ HD1	Max 240 ips @ CIF
	PAL	Max 50 ips @ D1	Max 100 ips @ HD1	Max 200 ips @ CIF
Recording Quality	Low / Fine / Superfine			
Maximum Average File Size	CIF: 6K HD1: 11K D1: 20K			
Recording Modes	Continuous, Motion, Alarm, V-Loss, Schedule			
Search Modes	Calendar, Search & Copy, Time, Event, Block, File, Bookmark & Log			
Playback Modes	Forward & Reverse, Pause, Picture by Picture, Normal, Slow up to 128X of			
	normal speed, Fast up to 128X of normal speed			
Motion Recording	300 Selectable Grids & Multi-Level Detection per Channel			
Alarm Recording	4 Channel Terminal Blocks, Normally Open or Normally Closed Circuit			
Alarm Output	4 Programmable Relay Out, Terminal Block			
Pre / Post Event Buffer	5 Seconds Pre-Event / Up to 60 Seconds Post-Event Buffer			
Remote Client				
Network	LAN, WAN, Internet			
DDNS/Dynamic IP support	Dynamic IP address and DDNS lookup			
Monitoring Environment	Dedicated Central Monitoring System			
Multisite Monitoring	Maximum of 16 Independent DVRs, Maximum of 256 Cameras			
Audio Transmission	2-Way Audio Communication			

Storage	
Internal Storage	4 Hard Drives, 4 Terabytes Maximum
External Storage	40 Hard Drives, 40 Terabytes Maximum
Speed	5400 RPM Minimum, 7200 RPM Maximum
DMA	45Mhz DMA
Hard Drive Type	EIDE Compatible
Seek Time	Faster than 9.0ms average
Expansion Bay Interface	USB 2.0
Data Redundancy	Event Backup / Individual Hard Drive Mirroring
System Monitoring	
Security	5 separate user access and passwords monitor menu access, record / playback / network / backup
Watchdog	Software Watchdog
System Log	Power Failure Check
Recovery	Auto-Reboot by watchdog and resumes previous operating mode & Database Recovery
Event Notification	Notification e-mail to up to 10 accounts on Motion, Alarm, V-Loss, HDD Fail
Log File List	20,000 Logs
System	
Operating System	Modified Embedded Linux
Simultaneous Functions	Pentaplex Plus: Record, Playback, Mirror, Backup, Network Transmission and Live Monitoring
Control Devices	Front buttons, IR Remote Controller, Mouse, Remote Client Software and Keyboard
Multiple DVR Support	Control up to 16 DVRs via Keyboard Controller; 16 with IR Remote Controller
Matrix & Cascade support	Up to 16 DVRs
File Compatibility	Compatible with Windows based operating systems
USB Interface	3 USB 2.0 slots, 1 in Front, 2 in Rear
Backup	External HDD, CD-RW, DVD-RW, USB Memory Stick
Serial Interface	RS-232C for External Control & Debugging
Terminal Block	RS-485 Interface for PTZ control
Ethernet	RJ45 @ 10/100Mbps
Power Source	12VDC 6.67AMPS
Power Consumption	Approximately 43.2 Watts w/ 1 Hard Drive
Operating Temperature	0℃ ~ +40℃ (32º ~ 104º Fahrenheit)
Storage Temperature	-10℃ ~ +60℃ (12º ~ 140º Fahrenheit)
Humidity	30% ~ 90% Non-Condensing
Dimensions	420 (W) X 70 (H) X 380 (D) mm
Weight	5.3kg (No HDD)

11.2 8 Channel DVR

Video				
Video Standard	NTSC & PAL Standards, automatic configuration			
Video Input	8 Channels BNC			
Input Level	1.0 Vp-p ± 10% Composite, 75 Ohm Balanced.			
Loop Through Output	8 Channels BNC w/ Automatic Signal Boost			
Main Video Output	1.0 Vp-p Composite, 75 Ohm Balanced			
Spot Video Output	1.0 Vp-p Composite, 75 Ohm Balanced			
S-Video Output	4-pins mini DIN			
VGA Output	15 pins female DSUB			
Channel Title	8 Alphanumeric Characters / Bitmap Picture or Characters			
Live Display	1, 4, 6, 7 & 8 w/ Customizable 4, 6 & 7 Channel View Modes			
Spot Display	Single Channel View			
Live Display Resolution	NTSC	D1 (720 X 480)	HD1 (720 x 240)	CIF (360 x 240)
	PAL	D1 (720 X 576)	HD1 (720 X 288)	CIF (360 x 288)
Playback Display	1, 4, 6, 7 & 8 w/ Customizable 4, 6 & 7 Channel View Modes			
Automatic Sequence Interval	0 ~ 60 seconds			
Audio				
Codec	ADPCM			
Audio In	8 Channels			
Audio Out	1 Channel			
Input Level	0.5 ~ 1.4 Vp-p @ 20KOhm			
Recording				
Codec	MPEG4			
Recording Resolution	NTSC	D1 (720 X 480)	Half-D1 (720 X 240)	CIF (360 X 240)
	PAL	D1 (720 X 576)	Half-D1 (720 X 288)	CIF (360 X 288)
Recording Speed	NTSC	Max 60 ips @ D1	Max 120 ips @ HD1	Max 240 ips @ CIF
	PAL	Max 50 ips @ D1	Max 100 ips @ HD1	Max 200 ips @ CIF
Recording Quality	Low / Fine / Superfine			
Maximum Average File Size	CIF: 6K HD1: 11K D1: 20K			
Recording Modes	Continuous, Motion, Alarm, V-Loss, Schedule			
Search Modes	Calendar, Search & Copy, Time, Event, Block, File, Bookmark & Log			
Playback Modes	Forward & Reverse, Pause, Picture by Picture, Normal, Slow up to 128th of			
	normal speed, Fast up to 128X normal speed			
Motion Recording	300 Selectable Grids & Multi-Level Detection per Channel			
Alarm Recording	4 Channel Terminal Blocks, Normally Open or Normally Closed Circuit			
Alarm Output	4 Programmable Relay Out, Terminal Block			
Pre / Post Event Buffer	5 Seconds Pre-Event / Up to 60 Seconds Post-Event Buffer			
Remote Client				
Network	LAN, WAN, Internet			
DDNS/Dynamic IP support	Dynamic IP address and DDNS lookup			
Monitoring Environment	Dedicated Central Monitoring System			
Multisite Monitoring	Maximum of 16 Independent DVRs, Maximum of 256 Cameras			
Audio Transmission	2-Way Audio Communication			

Storage	
Internal Storage	4 Hard Drives, 4 Terabytes Maximum
External Storage	40 Hard Drives, 40 Terabytes Maximum
Speed	5400 RPM Minimum, 7200 RPM Maximum
DMA	45Mhz DMA
Hard Drive Type	EIDE Compatible
Seek Time	Faster than 9.0ms average
Expansion Bay Interface	USB 2.0
Data Redundancy	Event Backup / Individual Hard Drive Mirroring
System Monitoring	
Security	5 separate user access and passwords monitor menu access, record / playback / network / backup
Watchdog	Software Watchdog
System Log	Power Failure Check
Recovery	Auto-Reboot by watchdog and resumes previous operating mode & Database Recovery
Event Notification	Notification e-mail to up to 10 accounts on Motion, Alarm, V-Loss, HDD Fail
Log File List	20,000 Logs
System	
Operating System	Modified Embedded Linux
Simultaneous Functions	Pentaplex Plus: Record, Playback, Mirror, Backup, Network Transmission and Live Monitoring
Control Devices	Front buttons, IR Remote Controller, Mouse, Remote Client Software and Keyboard
Multiple DVR Support	Control up to 16 DVRs via Keyboard Controller; 16 with IR Remote Controller
Matrix & Cascade support	Up to 16 DVRs
File Compatibility	Compatible with Windows based operating systems
USB Interface	3 USB 2.0 slots, 1 in Front, 2 in Rear
Backup	External HDD, CD-RW, DVD-RW, USB Memory Stick
Serial Interface	RS-232C for External Control & Debugging
Terminal Block	RS-485 Interface for PTZ control
Ethernet	RJ45 @ 10/100Mbps
Power Source	12VDC 6.67AMPS
Power Consumption	Approximately 43.2 Watts w/ 1 Hard Drive
Operating Temperature	0℃ ~ +40℃ (32º ~ 104º Fahrenheit)
Storage Temperature	-10℃ ~ +60℃ (12º ~ 140º Fahrenheit)
Humidity	30% ~ 90% Non-Condensing
Dimensions	420 (W) X 70 (H) X 380 (D) mm
Weight	5.3kg (No HDD)

11.3 4 Channel DVR

Video				
Video Standard	NTSC & PAL Standards, automatic configuration			
Video Input	4 Channels BNC			
Input Level	1.0 Vp-p ± 10% Composite, 75 Ohm Balanced.			
Loop Through Output	4 Channels BNC w/ Automatic Signal Boost			
Main Video Output	1.0 Vp-p Composite, 75 Ohm Balanced			
Spot Video Output	1.0 Vp-p Composite, 75 Ohm Balanced			
S-Video Output	4-pins mini DIN			
VGA Output	15 pins female DSUB			
Channel Title	8 Alphanumeric Characters / Bitmap Picture or Characters			
Live Display	1 & 4 w/ Customizable 4 Channel View Mode			
Spot Display	Single Channel View			
Live Display Resolution	NTSC	D1 (720 X 480)	HD1 (720 x 240)	CIF (360 x 240)
	PAL	D1 (720 X 576)	HD1 (720 X 288)	CIF (360 x 288)
Playback Display	1 & 4 w/ Customizable 4 Channel View Mode			
Automatic Sequence Interval	0 ~ 60 seconds			
Audio				
Codec	ADPCM			
Audio In	4 Channels			
Audio Out	1 Channel			
Input Level	0.5 ~ 1.4 Vp-p @ 20KOhm			
Recording				
Codec	MPEG4			
Recording Resolution	NTSC	D1 (720 X 480)	Half-D1 (720 X 240)	CIF (360 X 240)
	PAL	D1 (720 X 576)	Half-D1 (720 X 288)	CIF (360 X 288)
Recording Speed	NTSC	Max 60 ips @ D1	Max 120 ips @ HD1	Max 120 ips @ CIF
	PAL	Max 50 ips @ D1	Max 100 ips @ HD1	Max 100 ips @ CIF
Recording Quality	Low / Fine / Superfine			
Maximum Average File Size	CIF: 6K HD1: 11K D1: 20K			
Recording Modes	Continuous, Motion, Alarm, V-Loss, Schedule			
Search Modes	Calendar, Search & Copy, Time, Event, Block, File, Bookmark & Log			
Playback Modes	Forward & Reverse, Pause, Picture by Picture, Normal, Slow up to 128th of			
	normal speed, Fast up to 128X normal speed			
Motion Recording	300 Selectable Grids & Multi-Level Detection per Channel			
Alarm Recording	4 Channel Terminal Blocks, Normally Open or Normally Closed Circuit			
Alarm Output	4 Programmable Relay Out, Terminal Block			
Pre / Post Event Buffer	5 Seconds Pre-Event / Up to 60 Seconds Post-Event Buffer			
Remote Client				
Network	LAN, WAN, Internet			
DDNS/Dynamic IP support	Dynamic IP address and DDNS lookup			
Monitoring Environment	Dedicated Central Monitoring System			
Multisite Monitoring	Maximum of 16 Independent DVRs, Maximum of 256 Cameras			
Audio Transmission	2-Way Audio Communication			

Storage	
Internal Storage	4 Hard Drives, 4 Terabytes Maximum
External Storage	40 Hard Drives, 40 Terabytes Maximum
Speed	5400 RPM Minimum, 7200 RPM Maximum
DMA	45Mhz DMA
Hard Drive Type	EIDE Compatible
Seek Time	Faster than 9.0ms average
Expansion Bay Interface	USB 2.0
Data Redundancy	Event Backup / Individual Hard Drive Mirroring
System Monitoring	
Security	5 separate user access and passwords monitor menu access, record / playback / network / backup
Watchdog	Software Watchdog
System Log	Power Failure Check
Recovery	Auto-Reboot by watchdog and resumes previous operating mode & Database Recovery
Event Notification	Notification e-mail to up to 10 accounts on Motion, Alarm, V-Loss, HDD Fail
Log File List	20,000 Logs
System	
Operating System	Modified Embedded Linux
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Serial Interface	RS-232C for External Control & Debugging
Terminal Block	RS-485 Interface for PTZ control
Ethernet	RJ45 @ 10/100Mbps
Power Source	12VDC 6.67AMPS
Power Consumption	Approximately 43.2 Watts w/ 1 Hard Drive
Operating Temperature	0℃ ~ +40℃ (32º ~ 104º Fahrenheit)
Storage Temperature	-10℃ ~ +60℃ (12º ~ 140º Fahrenheit)
Humidity	30% ~ 90% Non-Condensing
Dimensions	420 (W) X 70 (H) X 380 (D) mm
Weight	5.3kg (No HDD)

XII. TECHNICAL SUPPORT

Please read the manual thoroughly before contacting the vendor or the manufacturer. If you still have questions or problems operating the DVR correctly, then please contact the reseller.

APPENDIX I

TIME ZONE LISTING

GMT-12:00	International Date Line West
GMT-11:00	Midway Island, Samoa
GMT-10:00	Hawaii
GMT-09:00	Alaska
GMT-08:00	Pacific Time (US & Canada); Tijuana
GMT-07:00	Arizona
GMT-07:00	Chihuahua, La Paz, Mazatlan
GMT-07:00	Mountain Time (US & Canada)
GMT-06:00	Central America
GMT-06:00	Central Time (US & Canada)
GMT-06:00	Guadalajara, Mexico City, Monterrey
GMT-06:00	Saskatchewan
GMT-05:00	Bogota, Lima, Quilto
GMT-05:00	Eastern Time (US & Canada)
GMT-05:00	Indiana (East)
GMT-04:00	Atlantic Time (Canada)
GMT-04:00	Caracas, La Paz
GMT-04:00	Santiago
GMT-03:30	Newfoundland
GMT-03:00	Brasilia
GMT-03:00	Buenos Aries, Georgetown
GMT-03:00	Greenland
GMT-02:00	Mid-Atlantic
GMT-01:00	Azores
GMT-01:00	Cape Verde Island.
GMT	Casablanca, Monrovia
GMT	Greenwich Mean Time: Dublin, Edinburgh, Lisbon, London
GMT+01:00	Amsterdam, Berlin, Bern, Rome, Stoholm, Vienna
GMT+01:00	Belgrade, Bratislava, Budapest, Ljubljana, Prague
GMT+01:00	Brussels, Copenhagen, Madrid, Paris
GMT+01:00	Sarajevo, Skopje, Warsaw, Zagreb
GMT+01:00	West Central Africa
GMT+02:00	Atehns, Beirut, Istanbul, Minsk
GMT+02:00	Bucharest
GMT+02:00	Cairo
GMT+02:00	Harare, Pretoria
GMT+02:00	Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius
GMT+02:00	Jerusalem
GMT+03:00	Baghdad
GMT+03:00	Kuwait, Riyadh
GMT+03:00	Moscow, St. Petersburg, Volgograd

GMT+03:00	Nairobi
GMT+03:30	Tehran
GMT+04:00	Abu Dhabi, Muscat
GMT+04:00	Baku, Tbilisi, Yeveran
GMT+04:30	Kabul
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GMT+05:45	Kathmandu
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GMT+06:00	Astana, Dhaka
GMT+06:00	Sri Jayawardenepura
GMT+06:30	Rangoon
GMT+07:00	Bangkok, Hanoi, Jakarta
GMT+07:00	Krasnoyarsk
GMT+08:00	Beijing, Chongqing, Hong Kong, Urumqi
GMT+08:00	Irkutsk, Ulaan Bataar
GMT+08:00	Kuala Lumpur, Singapore
GMT+08:00	Perth
GMT+08:00	Taipei
GMT+09:00	Osaka, Sapporo, Tokyo
GMT+09:00	Seoul
GMT+09:00	Yakutsk
GMT+09:30	Adelaide
GMT+09:30	Darwin
GMT+10:00	Brisbane
GMT+10:00	Canberra, Melbourne, Sydney
GMT+10:00	Guam, Port Moresby
GMT+10:00	Hobart
GMT+10:00	Vladivostok
GMT+11:00	Magadan, Solomon Island, New Caledonia
GMT+12:00	Auckland, Wellington
GMT+12:00	Fiji, Kamchatka, Marshal Island
GMT+13:00	Nuku'alofa

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